

South Dakota Department of Social Services

Medicaid P&T Committee Meeting
June 10, 2022



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South Dakota
Department of
Social Services

DEPARTMENT OF SOCIAL SERVICES

DIVISION OF MEDICAL SERVICES

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**SOUTH DAKOTA
MEDICAID P&T COMMITTEE MEETING
AGENDA**

June 10, 2022

1:00 – 3:00 PM

Meeting Link:

Ramada by Wyndham Sioux Falls Airport Hotel
1301 West Russell Street
Sioux Falls, SD

Meeting Room – Galley 1

Call to order

Approval of previous meeting minutes

PA update

Review of top 15 therapeutic categories/top 50 drugs

Old business

Narrow Therapeutic Index (NTI) drugs review

Sedative Hypnotics

Vuity utilization

Cyclobenzaprine review

Opioid & muscle relaxant

Opioid update

New business

Performance Measures presentation

Opioid & benzodiazepine combination

Opioid & stimulant combination

Fleqsuvy

Public input accepted after individual topic discussion

Next meeting date September 23, 2022 & adjournment

**South Dakota Department of Social Services, Division of Medicaid Services
Pharmacy & Therapeutics (P&T) Committee Meeting Minutes**

Friday, March 4, 2022

1:00 – 3:00 pm CT

Members and DSS Staff

Michelle Baack, MD	X	Heather Preuss, MD	X
Dana Darger, RPh, Chair	X	Matthew Stanley, DO	X
Mikel Holland, MD		Deidre Van Gilder, PharmD	X
Bill Ladwig, RPh	X	Mike Jockheck, DSS Staff	X
Kelley Oehlke, PharmD	X	Matthew Ballard, DSS Staff	X
Lenny Petrik, PharmD	X	Sarah Aker, DSS Staff	

Administrative Business

Darger called the meeting to order at 1:03 pm. The minutes of the December meeting were presented. Baack made a motion to approve. Petrik seconded the motion. The motion was unanimously approved via roll call vote.

Prior Authorization Update (PA) and Statistics

The committee reviewed the PA activity report from October 1, 2021, to December 31, 2021. A total of 1,631 PAs were reviewed of which 133 requests (8.2%) were received via telephone and 899 requests (55.1%) were received via fax, and 599 (36.7%) were reviewed via electronically. There was a 4.73% decrease of PAs received compared to the previous quarter.

Analysis of the Top 15 Therapeutic Classes and Drug Spend

The committee reviewed the top 15 therapeutic classes by total cost of claims from October 1, 2021, to December 31, 2021. The top five therapeutic classes based on paid amount were atypical antipsychotics, disease-modifying anti-rheumatic agents, cystic fibrosis correctors, skin and mucous membrane agents, and amphetamines. These top 15 therapeutic classes make up 25.2 % of total claims. The committee also reviewed the top 50 drugs based on amount paid and number of claims. The top 50 drugs by amount paid make up 9.20 % of total claims. Of note, vitamin D made its 4th quarter debut on the top 50 drugs by number of claims.

Ladwig inquired about focusing on strategies for biosimilars for future meetings.

Old Business

Antineoplastic oral drugs

Committee reviewed an in-depth analysis of utilization of antineoplastic oral drugs. Petrik provided the difficulties of split billing the oral anticancer medications. Darger inquired if there was any public comment. There were none.

Anticonvulsants

Committee reviewed utilization of brand name anticonvulsants. Darger commented that there is potentially excessive brand utilization. Darger inquired which drugs constituted as being narrow therapeutics index (NTI) drugs and if there was an official NTI drug list. Jockheck asked if the concern is for

the entire list of NTIs, not just the anticonvulsant. Darger and Baack requested to review the entire list of NTIs for the next meeting, including utilization. Stanley commented on the anticonvulsant utilization concerning the therapeutic window for brand utilization if not using for seizure disorder. The issue of authorized generics was also discussed which both pharmacists and physicians should be onboard. Darger inquired if there was any public comment. There were none.

Opioid update

The committee reviewed 4Q2021 opioid outcomes compared to previous quarters from the opioid initiatives. There was a slight decrease in opioid utilization and opioid utilizers during fourth quarter even with an increase in total eligible members.

New Business

Urinary antispasmodics PA review

Committee reviewed the PA approval rate and utilization for urinary antispasmodics. Committee discussed removing generic products from genitourinary smooth muscle relaxant step therapy. Baack made a motion to remove tolterodine tab, tolterodine cap ER, trospium tab, trospium cap ER, and solifenacin tab. Ladwig seconded the motion. The motion was unanimously approved via roll call vote. Darger inquired if there was any public comment. There were none.

Musculoskeletal therapy agents PA review

Committee reviewed the PA approval rate for musculoskeletal agents. All the PA reviews for cyclobenzaprine and methocarbamol were for exceeding the quantity limit. There were 2 PAs approved for quantity of 6 per day for cyclobenzaprine tablets. Van Gilder requested to review these.

Opioid and muscle relaxant combination

Committee reviewed an in-depth analysis of members taking opioids and muscle relaxants at the same time; the demographics, number of different drugs, and number of pharmacies and physicians. Baack provided insight on the appropriate use of muscle relaxants for members coming off opioids instead of benzodiazepines. Preuss provided professional experience on patients who have been taking significant amounts of opiates and benzodiazepines for years. The current trend of inappropriate use entails members taking stimulants and opioids. After much discussion, committee requested to review members taking opioids and benzodiazepines taking over 90 MME. Darger inquired if there was any public comment. There were none.

Sedative Hypnotics

Committee reviewed utilization of sedative hypnotics especially the increase in utilization of the dual orexin receptor agonist (DORAs). Darger requested to review potential PA criteria for DORAs at the next meeting. Van Gilder commented on the possibility of adding step therapy to these drugs. Both Darger and Ladwig inquired about the approvals of brand Ambien and Ambien CR. Van Gilder requested additional information regarding pediatric use with concomitant stimulant therapy. These findings will be brought back to the next meeting. After discussing zolpidem CR that is still on step therapy, Ladwig made a motion to move zolpidem CR off step therapy (PA). Van Gilder seconded the motion. The motion was unanimously approved via roll call vote. Darger inquired if there was any public comment. There were none.

Vuity and pilocarpine drops

Committee reviewed utilization for Vuity and pilocarpine drugs. Darger inquired if there was any public comment. Nathan Blake from Abbvie commented he was available for questions. Ladwig suggested bringing utilization back to the next meeting when the Committee could more clearly see utilization.

Opzelura

Opzelura clinical information was presented for review. Committee reviewed the proposed PA criteria. Darger inquired if there was any public comment. There were none. Baack made a motion to add PA to Opzelura. Ladwig seconded the motion. The motion was unanimously approved via roll call vote.

Jockheck provided an update on Hepatitis C criteria and stated Medicaid is removing the specialist requirement effective April 1, 2022.

Adjournment

The next meeting is scheduled on June 10, 2022. The September and December meetings are tentatively scheduled for September 23rd and December 2nd. The Committee made a motion to adjourn the meeting, and everyone seconded the motion. The motion passed unanimously, and the meeting adjourned at 3:01 pm.

PA Report

1/1/2022 – 3/31/2022

Compliance Summary

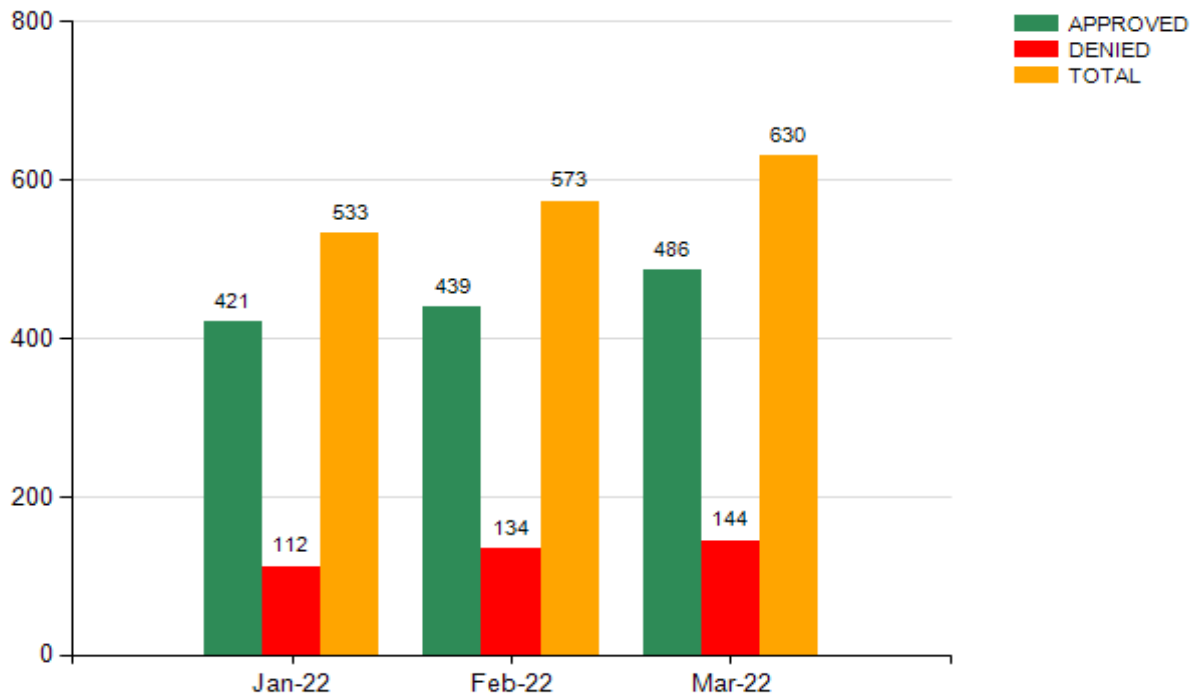
Priority	Total PAs	PAs Compliant (Standard - 72 hrs Urgent - 24 hrs)	PAs Not Compliant	% PAs Compliant	% PAs Not Compliant
Standard	1,706	1,706	0	100.00%	0.00%
Urgent	30	30	0	100.00%	0.00%
Grand Total	1,736	1,736	0		

Drug Class	# of	Phone Requests		Fax Requests		Real-Time PA	
	Requests	#	%	#	%	#	%
Total	1,736	104	6%	968	55.8%	664	38.2%

PA Initial Requests Summary

Month	Approved	Denied	Total
Jan-22	421	112	533
Feb-22	439	134	573
Mar-22	486	144	630
1Q22	1,346	390	1,736
Percent of Total	77.53%	22.47%	

PA Requests Details



Top Therapeutic Classes for PA

Drug Class	Approved	Denied	Total	Approval Rate	% of Total Requests	Most Requested Products
59 - ANTIPSYCHOTIC/ANTIMANIC	329	21	350	21	94.00%	, VRAYLAR
27 - ANTIDIABETICS*	201	18	219	18	91.78%	, OZEMPIC
65 - ANALGESICS - OPIOID*	111	78	189	78	58.73%	HYDROCODONE, APAP, TRAMADOL
90 - DERMATOLOGICALS*	91	75	166	75	54.82%	CLINDAMYCIN/BENZOYL PEROXIDE, IVERMECTIN
58 - ANTIDEPRESSANTS*	132	30	162	30	81.48%	, SERTRALINE HCL
OTHERS -	482	168	650	168	74.15%	
1Q22	1,346	390	1,736	390	77.53%	

PA Drug Class Summary

Drug Class	Approved	Denied	Total	Approval Rate
59 - ANTIPSYCHOTICS/ANTIMANIC AGENTS*	329	21	350	94.00%
27 - ANTIDIABETICS*	201	18	219	91.78%
58 - ANTIDEPRESSANTS*	132	30	162	81.48%
65 - ANALGESICS - OPIOID*	111	78	189	58.73%
90 - DERMATOLOGICALS*	91	75	166	54.82%
49 - ULCER DRUGS/ANTISPASMODICS/ANTICHOLINERG	87	13	100	87.00%
52 - GASTROINTESTINAL AGENTS - MISC.*	57	15	72	79.17%
67 - MIGRAINE PRODUCTS*	55	25	80	68.75%
66 - ANALGESICS - ANTI-INFLAMMATORY*	49	10	59	83.05%
41 - ANTIHISTAMINES*	30	2	32	93.75%
61 - ADHD/ANTI-NARCOLEPSY/ANTI-OBESITY/ANOREX	30	13	43	69.77%
16 - ANTI-INFECTIVE AGENTS - MISC.*	27	1	28	96.43%
72 - ANTICONVULSANTS*	25	7	32	78.13%
50 - ANTIEMETICS*	16	1	17	94.12%
54 - URINARY ANTISPASMODICS*	14	11	25	56.00%
30 - ENDOCRINE AND METABOLIC AGENTS - MISC.*	12	8	20	60.00%
62 - PSYCHOTHERAPEUTIC AND NEUROLOGICAL AGENT	11	3	14	78.57%
75 - MUSCULOSKELETAL THERAPY AGENTS*	11	8	19	57.89%
40 - CARDIOVASCULAR AGENTS - MISC.*	8	3	11	72.73%
21 - ANTINEOPLASTICS AND ADJUNCTIVE THERAPIES	7	1	8	87.50%
34 - CALCIUM CHANNEL BLOCKERS*	7	3	10	70.00%
83 - ANTICOAGULANTS*	6	1	7	85.71%
12 - ANTIVIRALS*	5	23	28	17.86%
44 - ANTIASTHMATIC AND BRONCHODILATOR AGENTS*	5	1	6	83.33%
02 - CEPHALOSPORINS*	3	1	4	75.00%
36 - ANTIHYPERTENSIVES*	3	2	5	60.00%
39 - ANTIHYPERLIPIDEMICS*	3	2	5	60.00%
60 - HYPNOTICS/SEDATIVES/SLEEP DISORDER AGENT	3	4	7	42.86%
99 - MISCELLANEOUS THERAPEUTIC CLASSES*	3	2	5	60.00%
33 - BETA BLOCKERS*	2	0	2	100.00%
24 - ESTROGENS*	1	0	1	100.00%
80 - NUTRIENTS*	1	0	1	100.00%
86 - OPHTHALMIC AGENTS*	1	2	3	33.33%
03 - MACROLIDES*	0	1	1	0.00%
11 - ANTIFUNGALS*	0	1	1	0.00%
42 - NASAL AGENTS - SYSTEMIC AND TOPICAL*	0	1	1	0.00%
45 - RESPIRATORY AGENTS - MISC.*	0	1	1	0.00%
74 - NEUROMUSCULAR AGENTS*	0	1	1	0.00%
79 - MINERALS & ELECTROLYTES*	0	1	1	0.00%
59 - ANTIPSYCHOTICS/ANTIMANIC AGENTS*	329	21	350	94.00%
1Q22	1,346	390	1,736	
Percent of Total	77.53%	22.47%		

PA Appeals Summary

Month	Approved	Approved %	Denied	Denied %	Total
Jan-22	8	80.00%	2	20.00%	10
Feb-22	22	78.57%	6	21.43%	28
Mar-22	20	71.43%	8	28.57%	28
1Q22	50	75.76%	16	24.24%	66

Appeals Detail

Drug Class	Approved	Denied	Total	Approval Rate
LUBIPROSTONE	5	0	5	100.00%
NORDITROPIN FLEXP	5	0	5	100.00%
HYDROCODONE BITARTRATE/ACETAMINOPHEN	4	0	4	100.00%
MAVYRET	4	5	9	44.44%
AIMOVIG	3	0	3	100.00%
UBRELVY	3	0	3	100.00%
EPIDIOLEX	2	2	4	50.00%
HYDROCODONE/ACETAMINOPHEN	2	0	2	100.00%
OXYCODONE HYDROCHLORIDE	2	0	2	100.00%
TRAMADOL HCL	2	2	4	50.00%
ADAPALENE/BENZOYL PEROXIDE	1	0	1	100.00%
DUPIXENT	1	0	1	100.00%
EMGALITY	1	1	2	50.00%
EPANED	1	0	1	100.00%
EPCLUSA	1	1	2	50.00%
EVRYSDI	1	0	1	100.00%
FENTANYL	1	0	1	100.00%
GATTEX	1	0	1	100.00%
HUMATROPE	1	0	1	100.00%
KINERET	1	0	1	100.00%
LANSOPRAZOLE ODT	1	0	1	100.00%
MEKTOVI	1	0	1	100.00%
NEXIUM	1	0	1	100.00%
NURTEC	1	0	1	100.00%
POTASSIUM CHLORIDE ER	1	0	1	100.00%
PULMOZYME	1	0	1	100.00%
RISPERIDONE	1	0	1	100.00%
TETRABENAZINE	1	0	1	100.00%
OZEMPIC	0	1	1	0.00%
SOFOSBUVIR/VELPATASVIR	0	2	2	0.00%
TROSPIMUM CHLORIDE	0	1	1	0.00%
XIFAXAN	0	1	1	0.00%
1Q22	50	16	66	

Top 15 Therapeutic Classes & Top 50 Drugs

TOP 15 THERAPEUTIC CLASSES BASED ON NUMBER OF CLAIMS FROM 1/1/2022 –3/31/2022					
	AHFS Description	Total Rxs	Pharmacy Due Amount	Paid/Rx	%Total Claims
1	SELECTIVE-SEROTONIN REUPTAKE INHIBITORS	15,430	\$198,674.54	\$12.88	6.88%
2	ANTICONVULSANTS, MISCELLANEOUS	11,925	\$1,156,109.49	\$96.95	5.31%
3	ATYPICAL ANTIPSYCHOTICS	9,323	\$2,878,451.25	\$308.75	4.15%
4	SELECTIVE BETA-2-ADRENERGIC AGONISTS	8,029	\$502,562.00	\$62.59	3.58%
5	RESPIRATORY AND CNS STIMULANTS	7,611	\$541,196.86	\$71.11	3.39%
6	AMPHETAMINES	7,440	\$1,329,148.30	\$178.65	3.32%
7	SECOND GENERATION ANTIHISTAMINES	7,422	\$84,468.15	\$11.38	3.31%
8	AMINOPENICILLIN ANTIBIOTICS	7,265	\$106,290.33	\$14.63	3.24%
9	PROTON-PUMP INHIBITORS	6,705	\$199,058.08	\$29.69	2.99%
10	ADRENALS	6,599	\$696,050.08	\$105.48	2.94%
11	OPIATE AGONISTS	5,547	\$171,780.50	\$30.97	2.47%
12	ANXIOLYTICS, SEDATIVES, AND HYPNOTICS, MISC	4,894	\$73,755.01	\$15.07	2.18%
13	CONTRACEPTIVES	4,087	\$124,727.51	\$30.52	1.82%
14	CENTRAL NERVOUS SYSTEM AGENTS, MISC.	4,031	\$184,571.83	\$45.79	1.80%
15	CENTRAL ALPHA-AGONISTS	3,729	\$64,400.41	\$17.27	1.66%
Total		110,037	\$8,311,244.34	\$75.53	49.03%

TOP 15 THERAPEUTIC CLASSES BASED ON AMOUNT PAID FROM 1/1/2022 –3/31/2022					
	AHFS Description	Total Rxs	Pharmacy Due Amount	Paid/Rx	%Total Claims
1	ATYPICAL ANTIPSYCHOTICS	9,323	\$2,878,451.25	\$308.75	4.15%
2	DISEASE-MODIFYING ANTIRHEUMATIC AGENTS	334	\$2,073,124.34	\$6,206.96	0.15%
3	SKIN AND MUCOUS MEMBRANE AGENTS, MISC.	638	\$1,903,032.36	\$2,982.81	0.28%
4	CYSTIC FIBROSIS (CFTR) CORRECTORS	77	\$1,533,387.21	\$19,914.12	0.03%
5	AMPHETAMINES	7,440	\$1,329,148.30	\$178.65	3.32%
6	ANTICONVULSANTS, MISCELLANEOUS	11,925	\$1,156,109.49	\$96.95	5.31%
7	HEMOSTATICS	49	\$1,059,760.41	\$21,627.76	0.02%
8	ANTINEOPLASTIC AGENTS	291	\$880,811.82	\$3,026.84	0.13%
9	INCRETIN MIMETICS	926	\$770,973.17	\$832.58	0.41%
10	ADRENALS	6,599	\$696,050.08	\$105.48	2.94%
11	LONG-ACTING INSULINS	1,333	\$633,486.54	\$475.23	0.59%
12	RAPID-ACTING INSULINS	1,312	\$561,202.33	\$427.75	0.58%
13	GI DRUGS, MISCELLANEOUS	405	\$557,583.69	\$1,376.75	0.18%
14	RESPIRATORY AND CNS STIMULANTS	7,611	\$541,196.86	\$71.11	3.39%
15	SELECTIVE BETA-2-ADRENERGIC AGONISTS	8,029	\$502,562.00	\$62.59	3.58%
Total		56,292	\$17,076,879.85	\$303.36	25.08%

Total Rx Claims from 1/1/2022 –3/31/2022	224,422
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TOP 50 DRUGS BASED ON NUMBER OF CLAIMS FROM 1/1/2022 –3/31/2022						
	AHFS Description	Drug Label Name	Total Rxs	Pharmacy Due Amount	Paid/Rx	%Total Claims
1	RESPIRATORY AND CNS STIMULANTS	METHYLPHENIDATE	5,381	\$268,686.51	\$49.93	2.40%
2	AMINOPENICILLIN ANTIBIOTICS	AMOXICILLIN	5,373	\$69,181.19	\$12.88	2.39%
3	SELECTIVE BETA-2-ADRENERGIC AGONISTS	ALBUTEROL SULFATE HFA	4,316	\$172,550.36	\$39.98	1.92%
4	SECOND GENERATION ANTIHISTAMINES	CETIRIZINE	4,313	\$45,490.12	\$10.55	1.92%
5	PROTON-PUMP INHIBITORS	OMEPRAZOLE	3,863	\$44,342.70	\$11.48	1.72%
6	SELECTIVE-SEROTONIN REUPTAKE INHIBITORS	FLUOXETINE	3,795	\$47,604.59	\$12.54	1.69%
7	AMPHETAMINES	VYVANSE	3,773	\$1,210,990.42	\$320.96	1.68%
8	SELECTIVE-SEROTONIN REUPTAKE INHIBITORS	ESCITALOPRAM OXALATE	3,495	\$43,829.85	\$12.54	1.56%
9	AMPHETAMINES	AMPHETAMINE/DEXTROAM	3,476	\$89,179.08	\$25.66	1.55%
10	SEROTONIN MODULATORS	TRAZODONE	3,436	\$34,257.82	\$9.97	1.53%
11	ANTICONVULSANTS, MISCELLANEOUS	GABAPENTIN	3,355	\$55,589.51	\$16.57	1.49%
12	LEUKOTRIENE MODIFIERS	MONTELUKAST SODIUM	3,244	\$43,196.37	\$13.32	1.45%
13	THYROID AGENTS	LEVOTHYROXINE SODIUM	2,927	\$45,751.22	\$15.63	1.30%
14	SELECTIVE-SEROTONIN REUPTAKE INHIBITORS	SERTRALINE HCL	2,739	\$31,555.67	\$11.52	1.22%
15	CENTRAL ALPHA-AGONISTS	CLONIDINE	2,460	\$23,030.17	\$9.36	1.10%
16	ANTIDEPRESSANTS, MISCELLANEOUS	BUPROPION	2,381	\$48,279.53	\$20.28	1.06%
17	OPIATE AGONISTS	HYDROCODONE BITARTRATE	2,298	\$33,958.27	\$14.78	1.02%
18	ANGIOTENSIN-CONVERTING ENZYME INHIBITOR	LISINOPRIL	2,226	\$21,865.18	\$9.82	0.99%
19	5-HT3 RECEPTOR ANTAGONISTS	ONDANSETRON ODT	2,200	\$31,438.91	\$14.29	0.98%
20	ATYPICAL ANTIPSYCHOTICS	ARIPIRAZOLE	2,139	\$32,365.05	\$15.13	0.95%
21	SELECTIVE-SEROTONIN REUPTAKE INHIBITORS	SERTRALINE	2,065	\$26,167.48	\$12.67	0.92%
22	HMG-COA REDUCTASE INHIBITORS	ATORVASTATIN CALCIUM	2,049	\$23,850.81	\$11.64	0.91%
23	CENTRAL NERVOUS SYSTEM AGENTS, MISC.	GUANFACINE ER	1,996	\$34,538.84	\$17.30	0.89%
24	ADRENALS	PREDNISONE	1,968	\$18,861.50	\$9.58	0.88%
25	OTHER MACROLIDE ANTIBIOTICS	AZITHROMYCIN	1,954	\$31,589.15	\$16.17	0.87%
26	SELECTIVE BETA-2-ADRENERGIC AGONISTS	ALBUTEROL SULFATE	1,906	\$35,843.32	\$18.81	0.85%
27	AMINOPENICILLIN ANTIBIOTICS	AMOXICILLIN/CLAVULANATE	1,891	\$37,094.71	\$19.62	0.84%
28	ATYPICAL ANTIPSYCHOTICS	RISPERIDONE	1,841	\$22,877.39	\$12.43	0.82%
29	ANTICONVULSANTS, MISCELLANEOUS	LAMOTRIGINE	1,833	\$26,790.15	\$14.62	0.82%
30	SEL.SEROTONIN, NOREPI REUPTAKE INHIBITOR	DULOXETINE	1,725	\$26,739.80	\$15.50	0.77%
31	SELECTIVE-SEROTONIN REUPTAKE INHIBITORS	FLUOXETINE HCL	1,721	\$22,168.09	\$12.88	0.77%
32	SECOND GENERATION ANTIHISTAMINES	LORATADINE	1,709	\$18,828.83	\$11.02	0.76%
33	3RD GENERATION CEPHALOSPORIN ANTIBIOTIC	CEFDINIR	1,665	\$35,377.58	\$21.25	0.74%
34	CORTICOSTEROIDS (EENT)	FLUTICASONE PROPIONATE	1,608	\$23,393.30	\$14.55	0.72%
35	1ST GENERATION CEPHALOSPORIN ANTIBIOTICS	CEPHALEXIN	1,588	\$25,226.25	\$15.89	0.71%
36	ATYPICAL ANTIPSYCHOTICS	QUETIAPINE FUMARATE	1,584	\$20,076.69	\$12.67	0.71%
37	BIGUANIDES	METFORMIN	1,560	\$16,345.72	\$10.48	0.70%
38	CORTICOSTEROIDS (SKIN, MUCOUS MEMBRAN)	TRIAMCINOLONE ACETONID	1,510	\$23,205.04	\$15.37	0.67%
39	BENZODIAZEPINES (ANTICONVULSANTS)	CLONAZEPAM	1,502	\$16,626.33	\$11.07	0.67%
40	ANXIOLYTICS, SEDATIVES, & HYPNOTICS	HYDROXYZINE HCL	1,443	\$16,654.63	\$11.54	0.64%
41	COMPOUNDS	-	1,422	\$38,748.17	\$27.25	0.63%
42	ANTICONVULSANTS, MISCELLANEOUS	LEVETIRACETAM	1,358	\$28,740.62	\$21.16	0.61%
43	VACCINES	PFIZER-BIONTECH COVID-19	1,301	\$51,412.65	\$39.52	0.58%
44	PROTON-PUMP INHIBITORS	PANTOPRAZOLE SODIUM	1,275	\$17,286.67	\$13.56	0.57%
45	DIHYDROPYRIDINES	AMLODIPINE BESYLATE	1,273	\$12,612.19	\$9.91	0.57%
46	ANTICONVULSANTS, MISCELLANEOUS	TOPIRAMATE	1,256	\$16,753.02	\$13.34	0.56%
47	CENTRALLY ACTING SKELETAL MUSCLE RELAXNT	CYCLOBENZAPRINE	1,244	\$13,153.35	\$10.57	0.55%
48	NEURAMINIDASE INHIBITOR ANTIVIRALS	OSETAMIVIR PHOSPHATE	1,200	\$51,839.46	\$43.20	0.53%
49	ANTIDEPRESSANTS, MISCELLANEOUS	MIRTAZAPINE	1,192	\$16,845.61	\$14.13	0.53%
50	VITAMIN D	VITAMIN D	1,181	\$11,824.51	\$10.01	0.53%
	Total Top 50 Drugs		115,010	\$3,154,614.38	\$27.43	51.25%

TOP 50 DRUGS BASED ON AMOUNT PAID FROM 1/1/2022 –3/31/2022						
	AHFS Description	Drug Label Name	Total Rxs	Pharmacy Due Amount	Paid/Rx	%Total Claims
1*	DISEASE-MODIFYING ANTIRHEUMATIC	HUMIRA PEN - ALL	152	\$1,264,517.58	\$8,319.19	0.07%
2	CYSTIC FIBROSIS (CFTR) CORRECTORS	TRIKAFTA	59	\$1,218,489.09	\$20,652.36	0.03%
3	AMPHETAMINES	VYVANSE	3,773	\$1,210,990.42	\$320.96	1.68%
4	ATYPICAL ANTIPSYCHOTICS	INVEGA SUSTENNA - ALL	320	\$868,296.74	\$2,713.43	0.14%
5	SKIN AND MUCOUS MEMBRANE	STELARA	37	\$810,303.20	\$21,900.09	0.02%
6	ATYPICAL ANTIPSYCHOTICS	LATUDA	463	\$577,510.90	\$1,247.32	0.21%
7	SKIN AND MUCOUS MEMBRANE AGENTS	DUPIXENT	160	\$500,383.29	\$3,127.40	0.07%
8	ATYPICAL ANTIPSYCHOTICS	ARISTADA & INITIO	163	\$411,317.37	\$2,523.42	0.07%
9	ATYPICAL ANTIPSYCHOTICS	VRAYLAR	335	\$396,837.86	\$1,184.59	0.15%
10	INCRETIN MIMETICS	OZEMPIC	457	\$371,458.84	\$812.82	0.20%
11*	DISEASE-MODIFYING ANTIRHEUMATIC	COSENTYX SENSORDY - ALL	53	\$370,248.95	\$6,985.83	0.02%
12	SOMATOTROPIN AGONISTS	NORDITROPIN FLEXPOR	77	\$338,796.63	\$4,399.96	0.03%
13	CYSTIC FIBROSIS (CFTR) CORRECTORS	ORKAMBI	18	\$314,898.12	\$17,494.34	0.01%
14	HEMOSTATICS	HEMLIBRA	6	\$303,221.52	\$50,536.92	0.00%
15	MUCOLYTIC AGENTS	PULMOZYME	73	\$286,634.85	\$3,926.50	0.03%
16	RESPIRATORY AND CNS STIMULANTS	METHYLPHENIDATE	5,381	\$268,686.51	\$49.93	2.40%
17	GI DRUGS, MISCELLANEOUS	GATTEX	6	\$257,544.00	\$42,924.00	0.00%
18*	ANTICONVULSANTS, MISCELLANEOUS	EPIDIOLEX	118	\$252,062.39	\$2,136.12	0.05%
19	HEMOSTATICS	ADVATE	7	\$243,506.69	\$34,786.67	0.00%
20	LONG-ACTING INSULINS	LANTUS & SOLOSTAR	584	\$236,857.27	\$405.58	0.26%
21	ADRENALS	FLOVENT HFA	998	\$236,745.19	\$237.22	0.44%
22	HIV INTEGRASE INHIBITOR ANTIRETROVIRALS	BIKTARVY	68	\$234,808.83	\$3,453.07	0.03%
23	ANTICONVULSANTS, MISCELLANEOUS	VIMPAT	255	\$233,936.38	\$917.40	0.11%
24	SODIUM-GLUC COTRANSPORT-2 INHIB	JARDIANCE	443	\$228,568.80	\$515.96	0.20%
25*	RAPID-ACTING INSULINS	INSULIN ASPART FLEX - ALL	642	\$226,360.43	\$352.59	0.29%
26	INCRETIN MIMETICS	TRULICITY	267	\$224,080.33	\$839.25	0.12%
27*	DISEASE-MODIFYING ANTIRHEUMATIC	ENBREL SURECLICK - ALL	40	\$222,420.10	\$5,560.50	0.02%
28	ATYPICAL ANTIPSYCHOTICS	REXULTI	189	\$219,704.30	\$1,162.46	0.08%
29	SKIN AND MUCOUS MEMBRANE	SKYRIZI PEN - ALL	12	\$218,108.06	\$18,175.67	0.01%
30	VESICULAR MONOAMINE TRANSPORT2 INHIB	INGREZZA	26	\$183,646.20	\$7,063.32	0.01%
31	HEMOSTATICS	XYNTHA SOLOFUSE	4	\$173,326.76	\$43,331.69	0.00%
32	LONG-ACTING INSULINS	TRESIBA FLEXTOUCH	301	\$173,155.22	\$575.27	0.13%
33	SELECTIVE BETA-2-ADRENERGIC AGONISTS	ALBUTEROL SULFATE HFA	4,316	\$172,550.36	\$39.98	1.92%
34	RIFAMYCIN ANTIBIOTICS	XIFAXAN	67	\$167,115.38	\$2,494.26	0.03%
35	ENZYMES	PALYNZIQ	6	\$166,593.30	\$27,765.55	0.00%
36*	ATYPICAL ANTIPSYCHOTICS	ABILIFY MAINTENA	68	\$155,243.85	\$2,283.00	0.03%
37	SKIN AND MUCOUS MEMBRANE AGENTS	TALTZ	21	\$150,420.85	\$7,162.90	0.01%
38	HEMOSTATICS	RECOMBINATE	3	\$150,166.95	\$50,055.65	0.00%
39	DIGESTANTS	CREON	77	\$146,120.95	\$1,897.67	0.03%
40	HIV INTEGRASE INHIBITOR ANTIRETROVIRALS	GENVOYA	42	\$145,518.74	\$3,464.73	0.02%
41	DIRECT FACTOR XA INHIBITORS	ELIQUIS & STARTER PACK	294	\$137,489.61	\$467.65	0.13%
42	SELECTIVE BETA-2-ADRENERGIC AGONISTS	ADVAIR HFA	376	\$134,407.95	\$357.47	0.17%
43	HEMOSTATICS	HUMATE-P	11	\$130,357.59	\$11,850.69	0.00%
44	GI DRUGS, MISCELLANEOUS	CHOLBAM	6	\$124,413.30	\$20,735.55	0.00%
45	LONG-ACTING INSULINS	LEVEMIR & FLEXTOUCH	275	\$121,363.18	\$441.32	0.12%
46	Dipeptidyl Peptidase-4(DPP-4) INHIBIT	JANUVIA	249	\$119,593.37	\$480.29	0.11%
47	SKIN AND MUCOUS MEMBRANE	TREMFYA	9	\$112,029.87	\$12,447.76	0.00%
48	OTHER MISCELLANEOUS THERAPEUTIC	EVRYSDI	6	\$104,125.10	\$17,354.18	0.00%
49	DIRECT FACTOR XA INHIBITORS	XARELTO	216	\$103,407.23	\$478.74	0.10%
50	RAPID-ACTING INSULINS	NOVOLOG FLEXPEN	162	\$101,232.66	\$624.89	0.07%
Total Top 50 Drugs			21,691	\$15,519,573.06	\$715.48	9.67%

Old Business

Narrow Therapeutic Index (NTI) Drugs

FDA US Food & Drug Administration FY2015 Regulatory Science Research Report: Narrow Therapeutic Index Drugs: Narrow therapeutic index drugs are drugs where small differences in dose or blood concentration may lead to serious therapeutic failures and/or adverse drug reactions that are life-threatening or result in persistent or significant disability or incapacity.

South Dakota NTI drug list

Therapeutic Class

- Carbamazepine
- Cyclosporine
- Digoxin
- Lamotrigine
- Levetiracetam
- Lithium
- Pancreatic Drug Products
- Phenytoin
- Procainamide
- Quinidine
- Thyroid preparations
- Theophylline
- Topiramate
- Valproic Acid
- Warfarin

Example Brand Names:

Tegretol
Neoral, Sandimmune
Lanoxin, Digitek
Lamictal/XR
Keppra
Lithobid, Eskalith
Creon, Pancreaze
Dilantin, Phenytek
Pronestyl, Procanbid
Quinidex, Quinaglute, Quinamm
Synthroid, Levothroid, Armour Thyroid
Aminophylline, Elixophyllin, Theo-24, Theo-Dur, Theo-chron, Uniphyl
Topamax
Depakene
Coumadin, Jantoven

Other States' NTI drug list:

State A

- Coumadin
- Dilantin
- Lanoxin
- Premarin
- Provera
- Synthroid
- Tegretol

State B

- Dilantin
- Tegretol

NTI Utilization

Time frame: 1/1/2022 to 4/30/2022

Carbamazepine	Total Rx	Paid Amount	Paid/Rx	Utilizers
carbamazepine 200mg	136	\$3,935.90	\$28.94	40
carbamazepine SUSP 100/5ml	39	\$3,026.77	\$77.61	9
carbamazepine CAP 100mg ER	18	\$1,857.05	\$103.17	6
carbamazepine CAP 200mg ER	44	\$4,632.74	\$105.29	13
carbamazepine CAP 300mg ER	43	\$4,149.56	\$96.50	13
TEGRETOL-XR TAB 100MG	4	\$460.11	\$115.03	4
carbamazepine TAB 100mg ER	24	\$990.88	\$41.29	8
carbamazepine TAB 200mg ER	27	\$1,990.79	\$73.73	10
carbamazepine TAB 400mg ER	17	\$2,287.54	\$134.56	8
carbamazepine CHW 100mg	52	\$3,182.49	\$61.20	16

Cyclosporine	Total Rx	Paid Amount	Paid/Rx	Utilizers
NEORAL CAP 25MG	3	\$230.22	\$76.74	1
cyclosporine CAP 25mg MOD	12	\$759.67	\$63.31	4
cyclosporine CAP 100mg MOD	14	\$1,246.88	\$89.06	4
NEORAL SOL 100MG/ML	3	\$1,503.66	\$501.22	1
cyclosporine SOL MODIFIED	1	\$94.86	\$94.86	1

Digoxin	Total Rx	Paid Amount	Paid/Rx	Utilizers
digox TAB 0.25mg	4	\$67.89	\$16.97	1
digoxin TAB 0.125mg	74	\$1,200.62	\$16.22	25
digoxin TAB 0.25mg	25	\$460.29	\$18.41	10
digoxin SOL 50mcg/ml	2	\$260.27	\$130.14	2

Lamotrigine	Total Rx	Paid Amount	Paid/Rx	Utilizers
lamotrigine TAB 25mg	591	\$7,427.11	\$12.57	262
LAMICTAL TAB 100MG	10	\$13,666.30	\$1,366.63	3
lamotrigine TAB 100mg	845	\$12,061.24	\$14.27	308
LAMICTAL TAB 150MG	3	\$3,229.14	\$1,076.38	1
lamotrigine TAB 150mg	384	\$5,041.35	\$13.13	131
LAMICTAL TAB 200MG	12	\$18,487.43	\$1,540.62	3
lamotrigine TAB 200mg	582	\$8,527.57	\$14.65	180
lamotrigine TAB 25mg ER	3	\$189.70	\$63.23	3
lamotrigine TAB 50mg ER	28	\$1,889.17	\$67.47	10
lamotrigine TAB 100mg ER	49	\$4,645.32	\$94.80	16
LAMICTAL XR TAB 200MG	7	\$12,197.45	\$1,742.49	2
lamotrigine TAB 200mg ER	36	\$2,487.77	\$69.10	13
lamotrigine TAB 250mg ER	2	\$185.48	\$92.74	2
LAMICTAL XR TAB 300MG	1	\$2,584.97	\$2,584.97	1
lamotrigine TAB 300mg ER	19	\$4,266.71	\$224.56	6
lamotrigine CHW 5mg	11	\$374.82	\$34.07	3
lamotrigine CHW 25mg	52	\$4,013.30	\$77.18	16
lamotrigine TAB 25mg ODT	9	\$11,180.04	\$1,242.23	4
lamotrigine TAB 50mg ODT	13	\$2,332.29	\$179.41	3
lamotrigine TAB 100mg ODT	2	\$584.36	\$292.18	1

Levetiracetam	Total Rx	Paid Amount	Paid/Rx	Utilizers
KEPPRA SOL 100MG/ML	8	\$15,333.96	\$1,916.75	2
levetiracetam SOL 100mg/ml	646	\$13,349.27	\$20.66	186
KEPPRA XR TAB 750MG	4	\$5,615.20	\$1,403.80	1
levetiracetam TAB 250mg	145	\$2,567.73	\$17.71	48
KEPPRA TAB 500MG	7	\$4,596.24	\$656.61	2
SPRITAM TAB 500MG	3	\$1,701.06	\$567.02	1
levetiracetam TAB 500mg	592	\$11,980.43	\$20.24	202
KEPPRA TAB 750MG	4	\$1,053.82	\$263.46	1
levetiracetam TAB 750mg	147	\$3,072.13	\$20.90	48
levetiracetam TAB 1000mg	257	\$6,587.89	\$25.63	79
levetiracetam TAB 500mg ER	44	\$1,456.06	\$33.09	13
levetiracetam TAB 750mg ER	11	\$486.71	\$44.25	4

Lithium	Total Rx	Paid Amount	Paid/Rx	Utilizers
lithium carb CAP 150mg	107	\$1,306.29	\$12.21	29
lithium carb CAP 300mg	260	\$3,136.75	\$12.06	73
lithium carb CAP 600mg	22	\$405.02	\$18.41	10
lithium carb TAB 300mg	19	\$395.27	\$20.80	9
lithium carb TAB 300mg ER	74	\$1,378.69	\$18.63	22
lithium carb TAB 450mg ER	37	\$648.51	\$17.53	14

Pancreatic Drug Products	Total Rx	Paid Amount	Paid/Rx	Utilizers
CREON CAP 12000UNT	9	\$8,755.31	\$972.81	4
CREON CAP 24000UNT	50	\$121,987.40	\$2,439.75	20
CREON CAP 3000UNIT	8	\$5,301.83	\$662.73	4
CREON CAP 36000UNT	13	\$30,950.85	\$2,380.83	4
CREON CAP 6000UNIT	22	\$16,778.62	\$762.66	10
PANCREAZE CAP 21000UNT	1	\$2,233.79	\$2,233.79	1
PANCREAZE CAP 2600UNIT	1	\$32.01	\$32.01	1
PERTZYE CAP 16000U	5	\$9,301.35	\$1,860.27	2
PERTZYE CAP 24000U	2	\$4,492.74	\$2,246.37	1
VIOKACE TAB 10440	4	\$3,341.28	\$835.32	2
ZENPEP CAP 10000UNT	18	\$32,971.37	\$1,831.74	5
ZENPEP CAP 20000UNT	4	\$3,495.88	\$873.97	1
ZENPEP CAP 25000	1	\$1,786.14	\$1,786.14	1
ZENPEP CAP 40000	3	\$38,306.07	\$12,768.69	1

Phenytoin	Total Rx	Paid Amount	Paid/Rx	Utilizers
DILANTIN CHW 50MG	7	\$1,260.16	\$180.02	2
phenytoin CHW 50mg	23	\$762.02	\$33.13	7
phenytoin SUS 125/5ml	16	\$516.56	\$32.29	4
DILANTIN CAP 30MG	8	\$845.01	\$105.63	2
phenytoin EX CAP 100mg	128	\$3,591.29	\$28.06	37
phenytoin EX CAP 200mg	2	\$84.59	\$42.30	1
phenytoin EX CAP 300mg	1	\$96.51	\$96.51	1

Theophylline	Total Rx	Paid Amount	Paid/Rx	Utilizers
THEO-24 CAP 100MG CR	4	\$371.96	\$92.99	1
THEO-24 CAP 300MG CR	1	\$160.78	\$160.78	1
theophylline TAB 300mg ER	10	\$1,032.62	\$103.26	3
theophylline TAB 400mg ER	4	\$120.49	\$30.12	1

Topiramate	Total Rx	Paid Amount	Paid/Rx	Utilizers
topiramate TAB 25mg	558	\$6,408.61	\$11.48	237
TOPAMAX TAB 50MG	8	\$5,311.08	\$663.89	2
topiramate TAB 50mg	589	\$7,082.64	\$12.02	225
topiramate TAB 100mg	391	\$5,310.05	\$13.58	136
TOPAMAX TAB 200MG	5	\$5,931.99	\$1,186.40	1
topiramate TAB 200mg	123	\$1,963.34	\$15.96	35
topiramate CAP 15mg	19	\$1,117.00	\$58.79	7
topiramate CAP 25mg	13	\$665.04	\$51.16	7
topiramate CAP ER 25mg	10	\$1,618.20	\$161.82	4
topiramate CAP ER 50mg	9	\$2,854.62	\$317.18	3
topiramate CAP ER 100mg	3	\$874.08	\$291.36	3
EPRONTIA SOL 25MG/ML	1	\$675.55	\$675.55	1

Valproic Acid	Total Rx	Paid Amount	Paid/Rx	Utilizers
valproic acid SOL 250/5ML	298	\$5,785.84	\$19.42	59
valproic acid CAP 250MG	71	\$2,890.96	\$40.72	24
DEPAKOTE SPR CAP 125MG	21	\$5,890.42	\$280.50	5
divalproex CAP 125mg	164	\$12,057.70	\$73.52	52
divalproex TAB 125mg DR	38	\$589.35	\$15.51	10
DEPAKOTE TAB 250MG DR	4	\$1,745.57	\$436.39	1
divalproex TAB 250mg DR	261	\$4,119.14	\$15.78	77
divalproex TAB 500mg DR	372	\$7,239.29	\$19.46	102
divalproex ER TAB 250mg	205	\$4,501.33	\$21.96	61
DEPAKOTE ER TAB 500MG	13	\$9,466.24	\$728.17	3
divalproex ER TAB 500mg	434	\$10,675.58	\$24.60	127

Warfarin	Total Rx	Paid Amount	Paid/Rx	Utilizers
JANTOVEN TAB 1MG	12	\$170.99	\$14.25	5
warfarin TAB 1mg	44	\$555.53	\$12.63	14
JANTOVEN TAB 2.5MG	10	\$104.31	\$10.43	2
warfarin TAB 2.5mg	21	\$259.11	\$12.34	11
JANTOVEN TAB 2MG	5	\$45.66	\$9.13	2
warfarin TAB 2mg	10	\$123.21	\$12.32	3
JANTOVEN TAB 3MG	2	\$27.45	\$13.73	1
warfarin TAB 3mg	24	\$314.39	\$13.10	7
JANTOVEN TAB 4MG	9	\$112.05	\$12.45	3
warfarin TAB 4mg	38	\$430.42	\$11.33	10
JANTOVEN TAB 5MG	46	\$474.36	\$10.31	16
warfarin TAB 5mg	157	\$1,895.07	\$12.07	43
warfarin TAB 6mg	29	\$258.00	\$8.90	7
warfarin TAB 7.5mg	22	\$216.06	\$9.82	6
warfarin TAB 10mg	8	\$94.57	\$11.82	3

Thyroid preparations	Total Rx	Paid Amount	Paid/Rx	Utilizers
ARMOUR THYRO TAB 15MG	27	\$734.87	\$27.22	8
ARMOUR THYRO TAB 30MG	17	\$614.69	\$36.16	5
ARMOUR THYRO TAB 60MG	21	\$671.16	\$31.96	5
ARMOUR THYRO TAB 90MG	18	\$992.48	\$55.14	6
ARMOUR THYRO TAB 120MG	11	\$636.03	\$57.82	5
ARMOUR THYRO TAB 180MG	5	\$217.26	\$43.45	2
	99	\$3,866.49	\$39.06	31
EUTHYROX TAB 25MCG	21	\$79.00	\$3.76	13
EUTHYROX TAB 50MCG	87	\$307.40	\$3.53	36
EUTHYROX TAB 75MCG	49	\$178.00	\$3.63	23
EUTHYROX TAB 88MCG	22	\$103.00	\$4.68	10
EUTHYROX TAB 100MCG	26	\$116.00	\$4.46	14
EUTHYROX TAB 112MCG	17	\$92.00	\$5.41	11
EUTHYROX TAB 125MCG	36	\$140.00	\$3.89	15
EUTHYROX TAB 137MCG	25	\$107.00	\$4.28	11
EUTHYROX TAB 150MCG	22	\$71.00	\$3.23	10
EUTHYROX TAB 175MCG	15	\$68.00	\$4.53	8
EUTHYROX TAB 200MCG	33	\$128.00	\$3.88	17
	353	\$1,389.40	\$3.94	168
LEVOTHYROXIN CAP 25MCG	1	\$134.11	\$134.11	1
LEVOTHYROXIN CAP 50MCG	8	\$1,013.03	\$126.63	4
LEVOTHYROXIN CAP 88MCG	2	\$225.58	\$112.79	2
LEVOTHYROXIN CAP 112MCG	5	\$557.27	\$111.45	2
LEVOTHYROXIN CAP 137MCG	3	\$318.87	\$106.29	2
LEVOTHYROXIN CAP 175MCG	2	\$222.58	\$111.29	1
LEVOTHYROXIN CAP 200MCG	4	\$669.90	\$167.48	2
	25	\$3,141.34	\$125.65	14
LEVOTHYROXIN TAB 25MCG	422	\$5,889.75	\$13.96	162
LEVOTHYROXIN TAB 50MCG	756	\$10,806.87	\$14.29	269
LEVOTHYROXIN TAB 75MCG	691	\$9,615.71	\$13.92	237
LEVOTHYROXIN TAB 88MCG	286	\$4,237.96	\$14.82	105
LEVOTHYROXIN TAB 100MCG	414	\$6,050.31	\$14.61	152
LEVOTHYROXIN TAB 112MCG	210	\$3,139.70	\$14.95	85
LEVOTHYROXIN TAB 125MCG	371	\$5,606.66	\$15.11	145
LEVOTHYROXIN TAB 137MCG	161	\$2,659.77	\$16.52	69
LEVOTHYROXIN TAB 150MCG	201	\$3,218.01	\$16.01	92
LEVOTHYROXIN TAB 175MCG	177	\$2,945.03	\$16.64	69
LEVOTHYROXIN TAB 200MCG	190	\$3,240.60	\$17.06	70
LEVOTHYROXIN TAB 300MCG	9	\$203.93	\$22.66	6
	3,888	\$57,614.30	\$14.82	1461
SYNTHROID TAB 25MCG	18	\$811.85	\$45.10	6
SYNTHROID TAB 50MCG	57	\$3,031.82	\$53.19	19
SYNTHROID TAB 75MCG	45	\$1,955.98	\$43.47	15
SYNTHROID TAB 88MCG	44	\$1,994.68	\$45.33	13
SYNTHROID TAB 100MCG	50	\$2,288.45	\$45.77	16
SYNTHROID TAB 112MCG	47	\$2,101.37	\$44.71	18
SYNTHROID TAB 125MCG	41	\$1,930.88	\$47.09	15
SYNTHROID TAB 137MCG	24	\$1,135.14	\$47.30	9
SYNTHROID TAB 150MCG	36	\$1,637.66	\$45.49	11
SYNTHROID TAB 175MCG	25	\$1,068.06	\$42.72	9
SYNTHROID TAB 200MCG	34	\$1,552.00	\$45.65	11
	3,913	\$60,755.64	\$15.53	1,475

Thyroid preparations	Total Rx	Paid Amount	Paid/Rx	Utilizers
TIROSINT CAP 25MCG	1	\$134.98	\$134.98	1
TIROSINT CAP 50MCG	2	\$269.80	\$134.90	1
TIROSINT CAP 75MCG	5	\$675.15	\$135.03	1
TIROSINT CAP 100MCG	1	\$135.00	\$135.00	1
TIROSINT CAP 112MCG	6	\$811.20	\$135.20	2
TIROSINT CAP 125MCG	2	\$270.58	\$135.29	1
TIROSINT CAP 137MCG	2	\$271.02	\$135.51	1
	19	\$2,567.73	\$135.14	8
TIROSINT-SOL SOL 25MCG/ML	2	\$287.50	\$143.75	1
TIROSINT-SOL SOL 37.5MCG/ML	4	\$575.00	\$143.75	1
TIROSINT-SOL SOL 50MCG/ML	7	\$1,084.71	\$154.96	2
TIROSINT-SOL SOL 75MCG/ML	2	\$287.50	\$143.75	1
	15	\$2,234.71	\$148.98	5

Sedative Hypnotics

Time frame: 1/1/2022 to 3/31/2022

Drug Name	Total Rx	Paid Amount	Paid/Rx	Quantity/DS	Utilizers	Age Range
buspirone	1,427	\$18,293.90	\$12.82	#68 per 29 days	684	7 – 68
doxepin (Silenor)	17	\$3,930.29	\$231.19	#29 per 29 days	10	18 – 57
estazolam	3	\$74.79	\$24.93	#30 per 30 days	2	37, 62
temazepam	66	\$1,257.83	\$19.06	#29 per 29 days	29	17 – 62
triazolam	7	\$77.54	\$4.56	#2.5 per 1.5 days	6	16 – 63
trazodone	3,436	\$34,257.82	\$9.97	#36 per 30 days	1,538	4 – 98
ramelteon (Rozerem)	27	\$1,160.75	\$39.29	#27 per 29 days	11	9 – 62
eszopiclone (Lunesta)	122	\$1,801.69	\$14.77	#28 per 27 days	52	18 – 63
zaleplon (Sonata)	8	\$121.50	\$15.19	#34 per 30 days	5	30 – 43
Ambien	3	\$1,684.20	\$561.40	#28 per 28 days	1	64
zolpidem tab	576	\$6,010.11	\$10.43	#27 per 27 days	252	12 – 65
AMBIEN CR	6	\$3,167.77	\$527.96	#27 per 27 days	2	60, 64
zolpidem CR	78	\$1,357.67	\$17.41	#33 per 33 days	32	24 – 62
EDLUAR SL	0					
INTERMEZZO SL	0					
ZOLPIMIST lingual spray	0					
Dual Orexin Receptor Agonist						
BELSOMRA (suvorexant)	60	\$21,473.95	\$357.90	#28 per 27 days	22	23 – 62
DAYVIGO (lemborexant)	17	\$4,829.04	\$284.06	#32 per 30 days	8	18 – 57
QUVIVIQ (daridorexant)	0					

*Red font denotes drug is on ST

PA criteria:

- 14-day trial of zolpidem IR in the last 365 days

State A – DORA PA criteria:

1. 18 years and older
2. QL – 1 per day
3. Drug-drug interaction, risk rating category D (CNS depressants may enhance the CNS depressant effect of ...) – Duplicate therapy of sedative hypnotics, benzodiazepine, DORAs not allowed

Vuity & pilocarpine drops

Time frame: 1/1/2022 to 3/31/2022

Drug Name	Total Rx	Paid Amount	Paid/Rx	Quantity/DS	Utilizers	Age Range	Taxonomy
VUITY SOL 1.25%	7	\$565.18	\$80.74	2.5 ml per 23 days \$32.30 per ml	5	47-52	Optometrist Family Practice Physician Asst
pilocarpine sol 1%	0		~\$67.00	15 ml per bottle \$4.47 per ml			
pilocarpine sol 2%	0		~\$71.00	15 ml per 22.5 days \$4.74 per ml			
pilocarpine sol 4%	0		~\$76.00	15 ml per bottle \$5.07 per ml			

Indications:

- pilocarpine 1%, 2%, 4% solution
 - Reduction of elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension
 - Induction of miosis
 - Prevention of postoperative elevated IOP associated with laser surgery
- Vuity 1.25% solution
 - Treatment of presbyopia in adults

Cyclobenzaprine

PA Review	Time Period	Total Manual Reviews	Approvals	Denials
cyclobenzaprine 5mg tab – 2 per day cyclobenzaprine 10mg tab – no QLL	4Q2021	8	5 PA for 5mg • 3 PAs for 3/day • 2 PAs for 6/day	3 PAs for 5mg • 1 PA for 6/day • 2 PAs for 3/day
AMRIX CAP SR – 1 per day	1Q2021	16	11 PAs for 5mg • 11 PAs for 3/day	3 PAs for 5mg • 2 PAs for 3/day • 1 PA for 4/day

4Q2021 Approvals for 6 per day:

- Patient 1: Diagnosis: Pain in right knee. Clinical documentation: R76/QL. Per drugdex support 10mg 3x/day.
- Patient 2: Muscle spasm of back. Clinical documentation: r76. Dx appropriate. 5mg orally 3 times/day, may increase to 10mg orally 3 times/day for no longer than 2 to 3 week.

Time frame: 1/1/2022 to 3/31/2022

Drug Name	Total Rx	Paid Amount	Paid/Rx	Quantity/DS	Utilizers	Age Range
cyclobenzaprine tab 5mg	265	\$2,553.72	\$9.64	#34 per 21 days	177	13 – 66
cyclobenzaprine tab 10mg	976	\$9,959.73	\$10.21	#45 per 21 days	618	14 – 69
cyclobenzaprine cap 30mg ER	3	\$639.90	\$213.30	#30 per 30 days	1	43
ARMIX CAP SR	0					
FEXMID TAB 7.5MG	0					

*Red font denotes drug is on PA

Drug Name	Quantity per Day	Total Rx	Utilizers	Avg Qty/DS
cyclobenzaprine tab 5mg	1	89	58	#30 per 30 days
	2	153	111	#34 per 17 days
	3	19	11	#75 per 25 days
cyclobenzaprine tab 10mg	1	242	163	#30 per 30 days
	2	177	117	#60 per 30 days
	3	545	346	#90 per 30 days
	4	4	4	#60 per 15 days
	5	5	2	#10 per 2 days
	6	5	3	#180 per 30 days
	9	1	1	#90 per 10 days

*Red font denotes quantity on PA

Opioid and Muscle Relaxant combination

- Number of different drugs per member during Jan to Feb 11, 2022
 - 208 members – 2 different drugs (opioid and muscle relaxant)
 - 71 members – 3 different drugs
 - 16 members – 4 different drugs
 - 3 members – 5 different drugs

Time frame: 1/1/2022 to 5/12/2022

Patient 1 taking 5 drugs

Drug Label Name	Date Filled	Total Quantity	Total Days Supply
BACLOFEN TAB 10MG	Jan 11, 2022	180	30
TIZANIDINE TAB 2MG	Jan 11, 2022	120	30
BACLOFEN TAB 20MG	Jan 19, 2022	120	30
BELBUCA MIS 900MCG	Jan 21, 2022	60	30
TRAMADOL HCL TAB 50MG	Jan 21, 2022	240	30
TIZANIDINE TAB 2MG	Feb 6, 2022	120	30
BACLOFEN TAB 20MG	Feb 18, 2022	120	30
TRAMADOL HCL TAB 50MG	Feb 19, 2022	240	30
BELBUCA MIS 900MCG	Feb 21, 2022	60	30
TIZANIDINE TAB 2MG	Mar 8, 2022	120	30
BACLOFEN TAB 20MG	Mar 16, 2022	120	30
BELBUCA MIS 900MCG	Mar 21, 2022	60	30
TRAMADOL HCL TAB 50MG	Mar 21, 2022	240	30
BACLOFEN TAB 20MG	Apr 12, 2022	120	30
TRAMADOL HCL TAB 50MG	Apr 20, 2022	240	30
BELBUCA MIS 900MCG	Apr 21, 2022	60	30
TIZANIDINE TAB 2MG	May 6, 2022	120	30
BACLOFEN TAB 20MG	May 7, 2022	120	30

Patient 5 taking 4 drugs

Drug Label Name	Date Filled	Total Quantity	Total Days Supply
BACLOFEN TAB 10MG	Jan 13, 2022	90	30
TIZANIDINE TAB 4MG	Jan 13, 2022	120	20
OXYCOD/APAP TAB 10-325MG	Jan 14, 2022	90	30
MORPHINE SUL TAB 15MG ER	Jan 20, 2022	30	30
BACLOFEN TAB 10MG	Jan 28, 2022	135	30
TIZANIDINE TAB 4MG	Jan 28, 2022	120	20
OXYCOD/APAP TAB 10-325MG	Feb 12, 2022	90	30
TIZANIDINE TAB 4MG	Feb 24, 2022	120	20
BACLOFEN TAB 10MG	Feb 25, 2022	135	30
MORPHINE SUL TAB 15MG ER	Feb 26, 2022	30	30
OXYCOD/APAP TAB 10-325MG	Mar 13, 2022	90	30
TIZANIDINE TAB 4MG	Mar 24, 2022	120	20
MORPHINE SUL TAB 15MG ER	Mar 28, 2022	30	30
OXYCOD/APAP TAB 10-325MG	Apr 19, 2022	90	30
TIZANIDINE TAB 4MG	Apr 19, 2022	120	20
MORPHINE SUL TAB 15MG ER	Apr 25, 2022	30	30

Patient 7 taking 4 drugs

Drug Label Name	Date Filled	Total Quantity	Total Days Supply
HYDROCO/APAP TAB 10-325MG	Jan 10, 2022	120	30
MORPHINE SUL TAB 15MG ER	Jan 10, 2022	90	30
CYCLOBENZAPR TAB 10MG	Jan 11, 2022	30	30
BUPRENORPHIN DIS 20MCG/HR	Jan 12, 2022	4	28
HYDROCO/APAP TAB 10-325MG	Feb 9, 2022	120	30
MORPHINE SUL TAB 15MG ER	Feb 9, 2022	90	30
CYCLOBENZAPR TAB 10MG	Feb 11, 2022	30	30
BUPRENORPHIN DIS 20MCG/HR	Feb 14, 2022	4	28
CYCLOBENZAPR TAB 10MG	Feb 28, 2022	60	30
BUPRENORPHIN DIS 20MCG/HR	Mar 10, 2022	4	28
HYDROCO/APAP TAB 10-325MG	Mar 11, 2022	120	30
MORPHINE SUL TAB 15MG ER	Mar 11, 2022	90	30
CYCLOBENZAPR TAB 10MG	Mar 23, 2022	60	30
BUPRENORPHIN DIS 20MCG/HR	Apr 7, 2022	4	28
HYDROCO/APAP TAB 10-325MG	Apr 9, 2022	120	30
MORPHINE SUL TAB 15MG ER	Apr 9, 2022	90	30
CYCLOBENZAPR TAB 10MG	Apr 13, 2022	90	30
CYCLOBENZAPR TAB 10MG	May 9, 2022	90	30
HYDROCO/APAP TAB 10-325MG	May 10, 2022	120	30
MORPHINE SUL TAB 15MG ER	May 10, 2022	90	30

Patient 10 taking 4 drugs

Drug Label Name	Date Filled	Total Quantity	Total Days Supply
FENTANYL DIS 12MCG/HR	Jan 18, 2022	10	30
FENTANYL DIS 25MCG/HR	Jan 18, 2022	10	30
OXYCODONE TAB 15MG	Jan 18, 2022	90	30
TIZANIDINE TAB 4MG	Jan 18, 2022	120	30
FENTANYL DIS 12MCG/HR	Feb 18, 2022	10	30
FENTANYL DIS 25MCG/HR	Feb 18, 2022	10	30
OXYCODONE TAB 15MG	Feb 18, 2022	90	30
CYCLOBENZAPR TAB 10MG	Feb 28, 2022	90	30
FENTANYL DIS 50MCG/HR	Mar 16, 2022	10	30
OXYCODONE TAB 15MG	Mar 16, 2022	90	30
TIZANIDINE TAB 4MG	Apr 6, 2022	120	30
FENTANYL DIS 50MCG/HR	Apr 14, 2022	10	30
OXYCODONE TAB 15MG	Apr 14, 2022	100	28
CYCLOBENZAPR TAB 10MG	Apr 27, 2022	90	30
OXYCODONE TAB 15MG	May 10, 2022	100	28

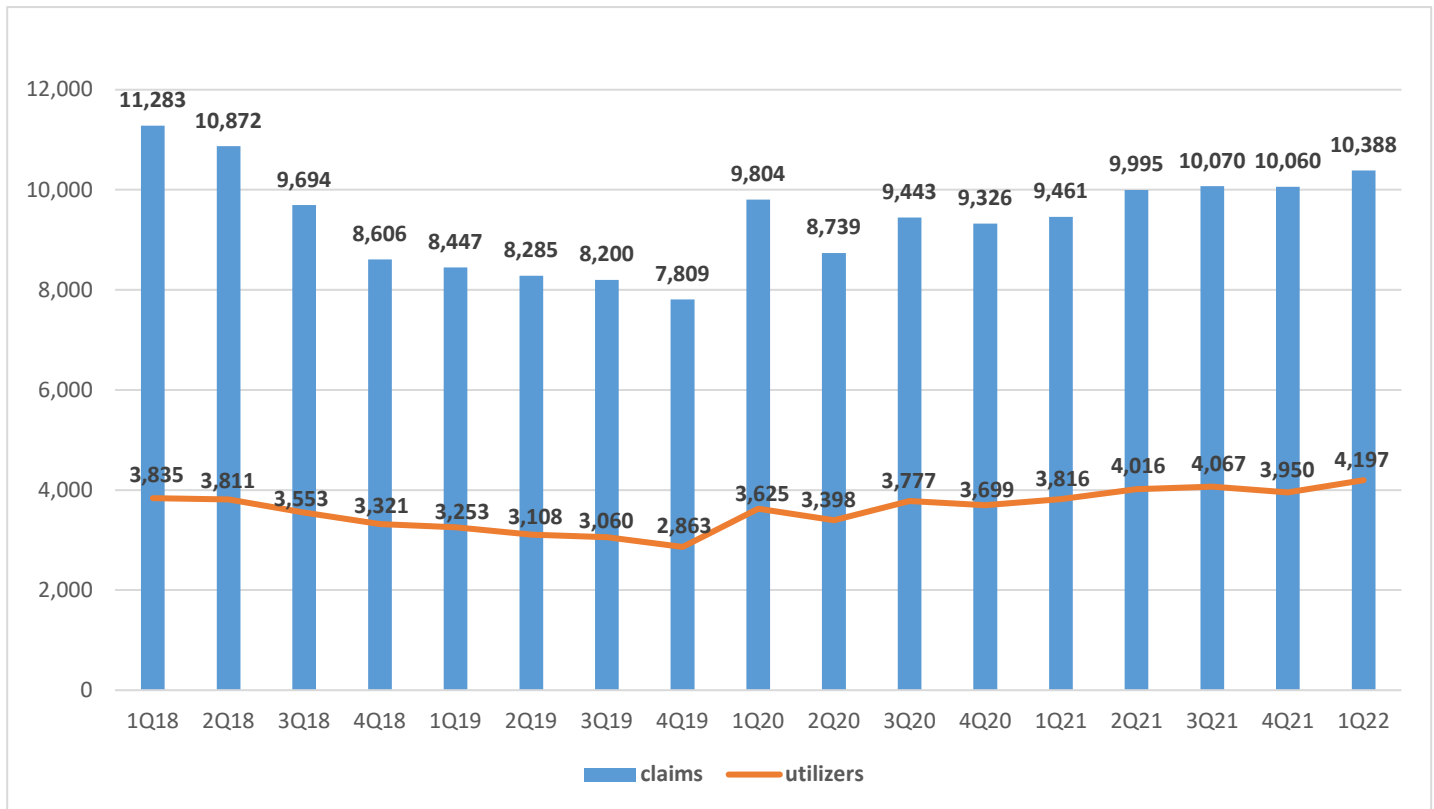
Patient 14 taking 4 drugs

Drug Label Name	Date Filled	Total Quantity	Total Days Supply
OXYCODONE TAB 15MG	Jan 12, 2022	120	30
BUPREN/NALOX MIS 8-2MG	Jan 28, 2022	120	30
CARISOPRODOL TAB 350MG	Feb 4, 2022	120	30
OXYCODONE TAB 20MG	Feb 7, 2022	120	30
TIZANIDINE TAB 4MG	Feb 18, 2022	90	30
BUPREN/NALOX MIS 8-2MG	Mar 4, 2022	120	30
CARISOPRODOL TAB 350MG	Mar 6, 2022	120	30
OXYCODONE TAB 20MG	Mar 6, 2022	120	30
TIZANIDINE TAB 4MG	Mar 25, 2022	90	30
BUPREN/NALOX MIS 8-2MG	Apr 2, 2022	120	30
CARISOPRODOL TAB 350MG	Apr 2, 2022	120	30
OXYCODONE TAB 20MG	Apr 3, 2022	120	30
BUPREN/NALOX MIS 8-2MG	May 1, 2022	120	30
CARISOPRODOL TAB 350MG	May 2, 2022	120	30
OXYCODONE TAB 20MG	May 3, 2022	120	30

Patient 17 taking 5 drugs

Drug Label Name	Date Filled	Total Quantity	Total Days Supply
OXYCOD/APAP TAB 5-325MG	Jan 12, 2022	110	28
OXYCONTIN TAB 20MG CR	Jan 12, 2022	60	30
CYCLOBENZAPR TAB 10MG	Jan 13, 2022	90	30
OXYCOD/APAP TAB 5-325MG	Feb 10, 2022	110	30
OXYCONTIN TAB 20MG CR	Feb 10, 2022	60	30
CYCLOBENZAPR TAB 10MG	Feb 15, 2022	90	10
BACLOFEN TAB 5MG	Feb 25, 2022	60	30
CYCLOBENZAPR TAB 10MG	Feb 28, 2022	90	30
OXYCOD/APAP TAB 5-325MG	Mar 14, 2022	110	30
OXYCONTIN TAB 20MG CR	Mar 14, 2022	60	30
BACLOFEN TAB 5MG	Apr 12, 2022	60	30
CYCLOBENZAPR TAB 10MG	Apr 12, 2022	90	30
OXYCOD/APAP TAB 5-325MG	Apr 15, 2022	110	30
OXYCONTIN TAB 20MG CR	Apr 15, 2022	60	30

Opioid Summary



- 1Q2018 to 4Q2019 excludes IHS
- 1Q2020 to current includes IHS
- Pandemic Closure – March 13, 2020

Opioid Initiatives:

1. June 1, 2018 – early refill threshold for controlled substance changed from 75% to 85%
2. July 1, 2018 – PA for more than one LAO and one SAO
3. August 1, 2018 – opioid Naïve PA (initial 7-day supply and 60 MED limit)
4. October 1, 2018 to October 1, 2019 – decrease down from 300 MED to 90 MED (cancer diagnosis excluded)

Other Initiatives:

- Buprenorphine PA (Bunavail/Suboxone/Zubsolv/Subutex)/ST (Belbuca/Butrans) removed 10/14/2019
- Lidoderm PA removed 8/1/2020

Total Eligibility and Utilizers

Quarter	Avg eligible members	Avg utilizing members of all drugs	% utilizing members of all drugs
1Q2020	123,573	27,089	21.9%
2Q2020	126,777	20,747	16.4%
3Q2020	132,373	23,417	17.7%
4Q2020	136,262	23,488	17.2%
1Q2021	139,748	24,405	17.5%
2Q2021	142,872	26,162	18.3%
3Q2021	146,023	27,847	19.1%
4Q2021	149,034	29,257	19.3%
1Q2022	151,735	28,892	19.0%

Opioid Utilization Snapshot

Opioid Claims **10,060**

3.0% prescription claims filled for an opioid
0.5% higher than Medicaid FFS benchmark

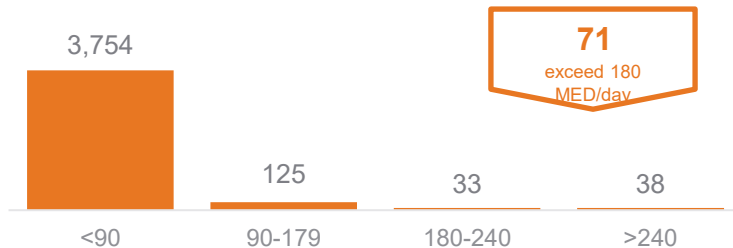
Utilizers **3,950**

31.6% are high utilizers¹

-3.3% lower than high utilizers Medicaid FFS

Utilizers by Cumulative MED⁴

Current CDC Guidelines⁵ urge doses of 90 MME⁶ or less in chronic opioid utilizers⁵



Shoppers: Poly Pharmacy

41 opioid utilizing members with 3+ pharmacies



Shoppers: Poly Prescriber

273 Shoppers: Poly Prescriber
 opioid utilizing members with 3+ prescribers

Opioid Claims **10,388**

2.9% prescription claims filled for an opioid
0.5% higher than Medicaid FFS benchmark

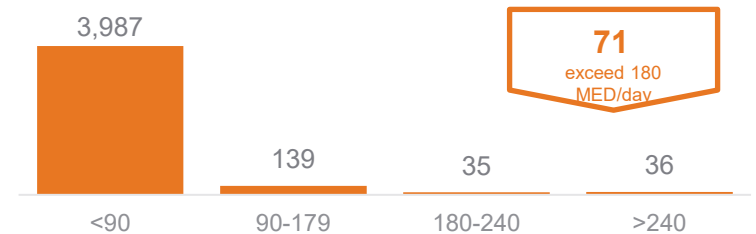
Utilizers **4,197**

30.2% are high utilizers¹

-3.7% lower than high utilizers Medicaid FFS

Utilizers by Cumulative MED⁴

Current CDC Guidelines⁵ urge doses of 90 MME⁶ or less in chronic opioid utilizers⁵



Shoppers: Poly Pharmacy

48 opioid utilizing members with 3+ pharmacies



Shoppers: Poly Prescriber

276 Shoppers: Poly Prescriber
 opioid utilizing members with 3+ prescribers

Opioid Utilization

SDM 1Q2022

Opportunities date range: Dec 2021 - Mar 2022
Benchmark: MEDICAID FEE FOR SERVICE

Utilizers: 4,197

2.9% of all Rx claims are filled for an Opioid

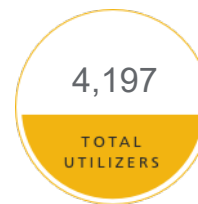
Opioid dependence can start in just a few days, and the risk of chronic opioid use increases with each additional day of opioid supplied, starting with the third day. Our Opioid Risk Management program, which includes point of sale, utilization management and retrospective drug utilization edits, are tightly aligned with CDC opioid prescribing guidelines which can help reduce exposure to excessive doses and prevent more members from transitioning from acute to chronic use.

- Opioid prescriptions account for 2.9% of all prescriptions this period, which is 0.5% higher than the benchmark
- 1,269 high opioid utilizers were identified this period, which is -3.7% lower than the benchmark

Opioid claims

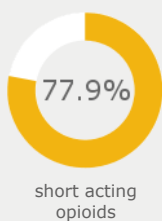


Opioid utilizers



High utilizers – Defined as 3+ opioid scripts within 120 day period

Claim breakdown



77.9% of all opioid Rxs were filled for short acting opioids. **1,605** Rxs were for medication assisted therapy (MAT) and **133** were for rescue therapy. CDC guidelines advise prescribers to manage pain with the lowest effective dose and to avoid or carefully justify doses for chronic users >90mg MME/day.

MAT – Medication Assisted Therapy (buprenorphine, etc)
Overdose rescue therapy – opioid overdose reversals w/naloxone
MME – relative potency of an opioid to a morphine dose

Utilizers by cumulative MED

71 utilizers exceed 180 MED/day

MED Scores	<90	90-179	180-240	>240
Utilizers	3,987	139	35	36

MED – Morphine Equivalent Dose is a relative potency of an opioid to standard of a morphine; Cumulative MED is daily MED or narcotic load across all active opioid prescriptions in a members profile within a 120 day period

Opioid Opportunity Assessment

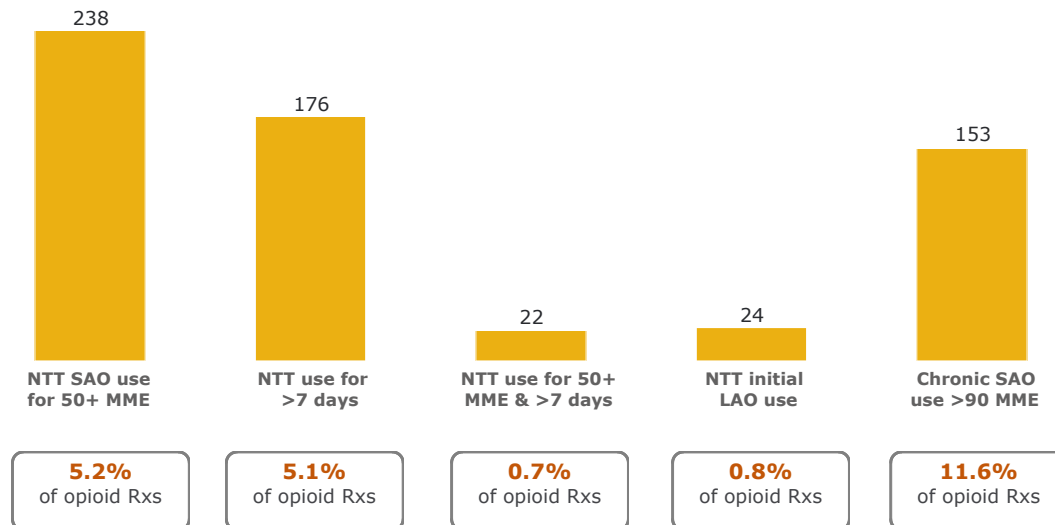
SDM 1Q2022

Opportunities date range: Dec 2021 - Mar 2022
Benchmark: MEDICAID FEE FOR SERVICE

Percent non-compliant: 10.3%

Utilizers non-compliant to opioid Rx CDC guidelines

(new to therapy and chronic use)



[NTT - view definition](#) | [SAO - view definition](#) | [LAO - view definition](#) | [MME - view definition](#)



DID YOU KNOW?

48 opioid utilizing members use 3 or more pharmacies and 276 opioid utilizing members use 3 or more prescribers.

NNT - New to Therapy
SAO - Short Acting Opioid
LAO - Long Acting Opioid

MME - Morphine Milligram Equivalent represents a relative potency of an opioid to a morphine dose

Opioid utilizers with potentially contraindicated medication use

SKELETAL MUSCLE
RELAXANTS

758

BENZODIAZEPINES

569

ANTICONSULSANTS

730

MEDICATION ASSISTED
THERAPY

N/A

PRENATAL

136

Anticonvulsants - gabapentin, pregabalin, Anticonvulsant benzodiazepines (clobazam, clonazepam, diazepam)

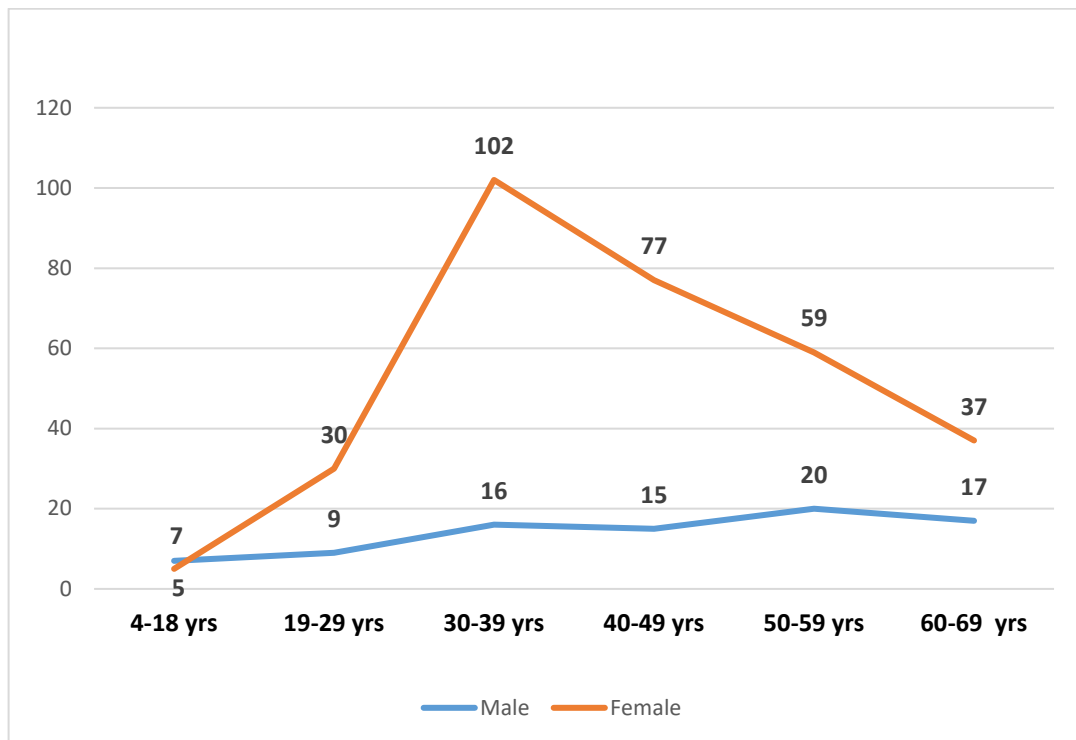
New Business

Opioid and Benzodiazepine combination

Time frame: 1/1/2022 to 4/30/2022

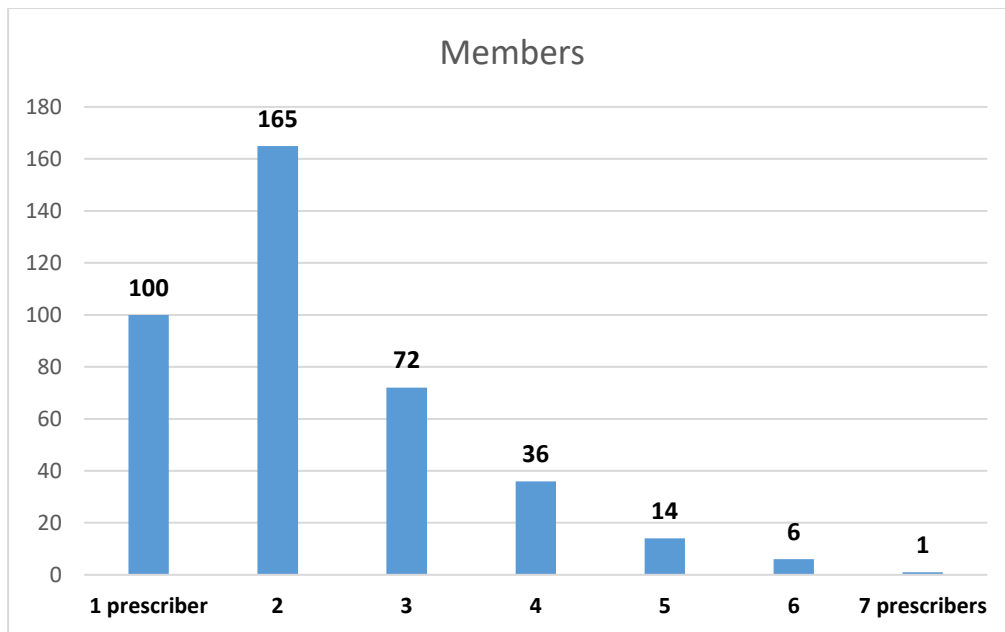
All claims including IHS

- 394 members taking opioid and benzodiazepine from Jan 2022 to April 2022
 - Member demographics
 - Males: 83 members (13 to 64 years old)
 - Females: 311 members (4 to 65 years old)

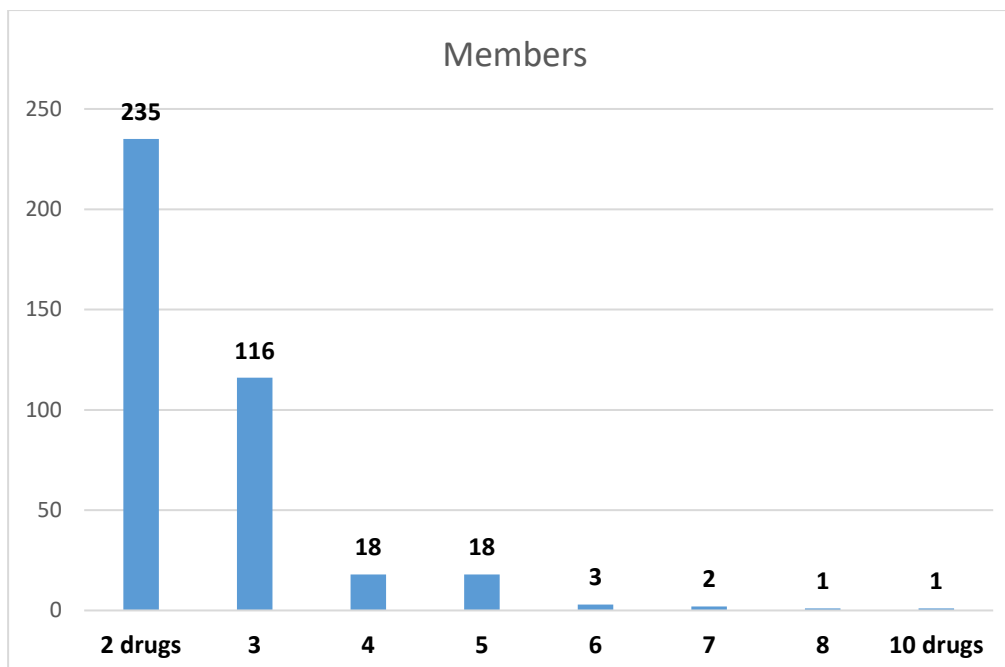


- Number of pharmacies filling for opioids and benzodiazepine for each member
 - 278 members – using 1 pharmacy
 - 101 members – using 2 different pharmacies
 - 11 members – using 3 different pharmacies
 - 2 members – using 2 different pharmacies
 - 2 members – using 2 different pharmacies

- Number of prescribers writing for opioids and benzodiazepine prescriptions for each member



- Number of different opioid and benzodiazepine prescriptions per member

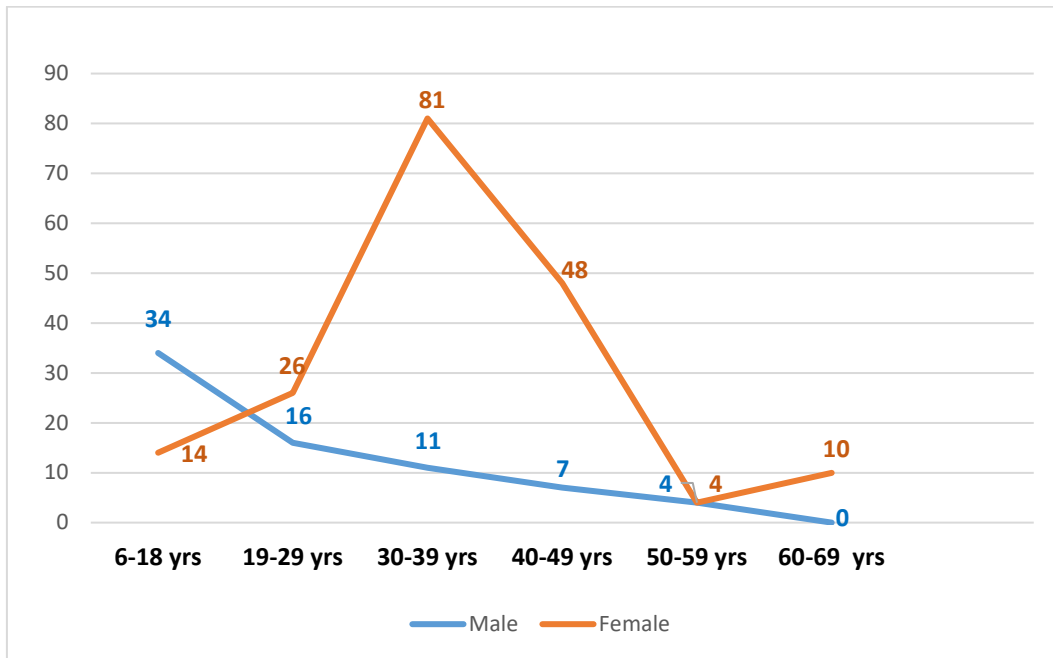


Opioid and Stimulant combination

Time frame: 1/1/2022 to 4/30/2022

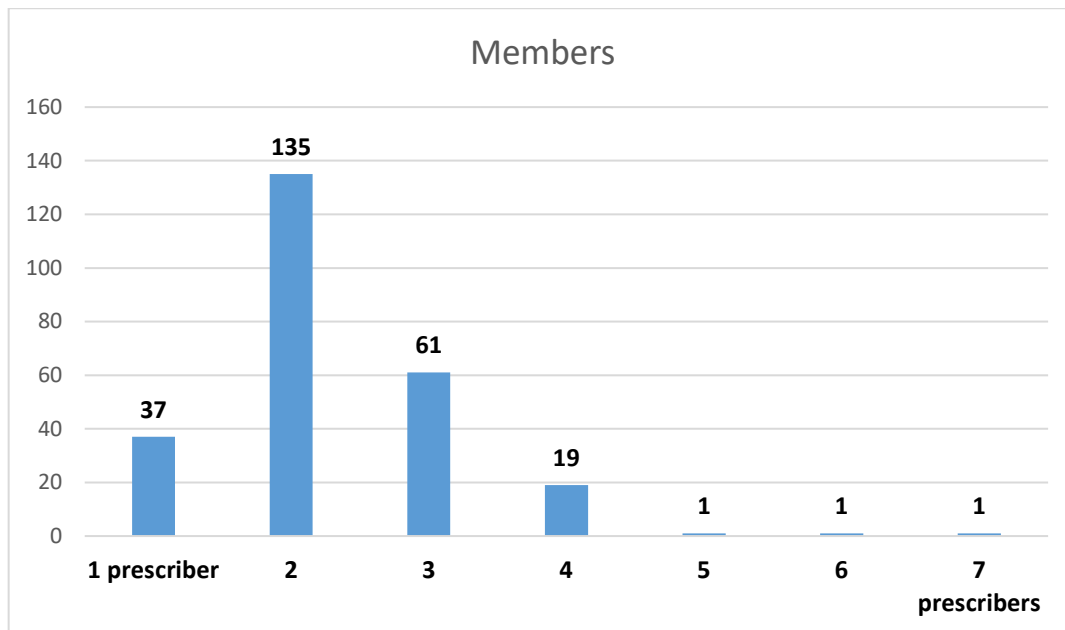
All claims including IHS

- 255 members taking opioid and stimulant from Jan 2022 to April 2022
 - Member demographics
 - Males: 72 members (6 to 57 years old)
 - Females: 183 members (9 to 64 years old)

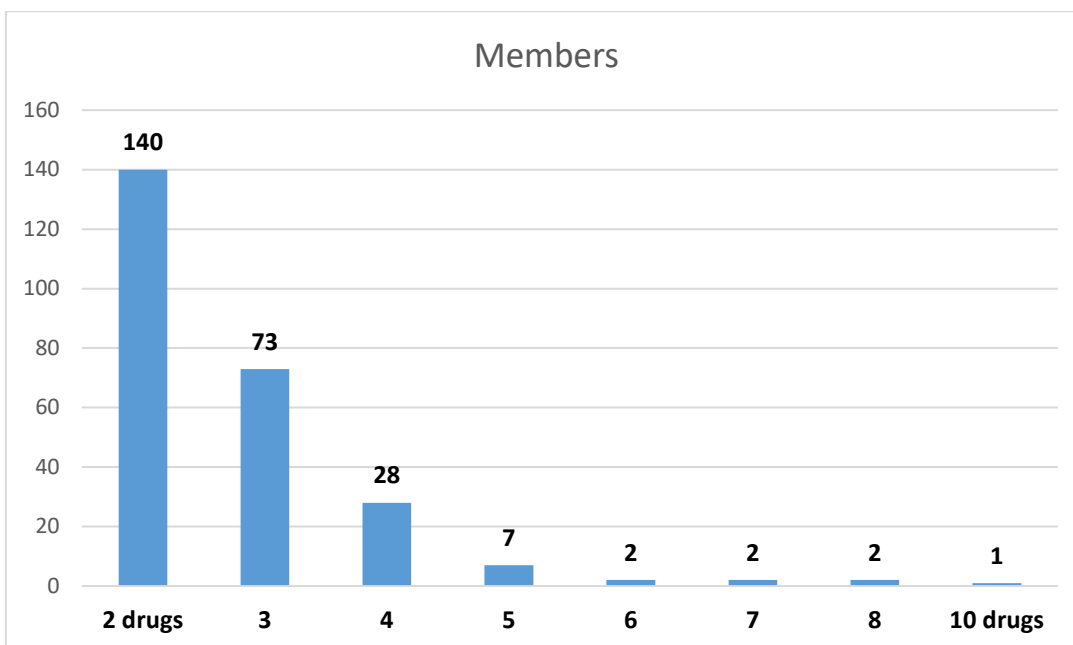


- Count of pharmacies filling for opioid and stimulant for each member
 - 163 members – using 1 pharmacy
 - 78 members – using 2 different pharmacies
 - 11 members – using 3 different pharmacies
 - 3 members – using 4 different pharmacies

- Number of prescribers writing for opioid and stimulant prescriptions for each member



- Number of different opioid and stimulant prescriptions per member



Fleqsuvy & baclofen

Time frame: 1/1/2022 to 4/30/2022

Drug Name	Total Rx	Paid Amount	Paid/Rx	Avg Quantity/DS	Utilizers	Age Range
baclofen TAB 5mg	65	\$2,767.09	\$42.57	#65 per 25 days	38	2 – 64
baclofen TAB 10mg	995	\$14,693.47	\$14.77	#88 per 27 days	364	1 – 66
baclofen TAB 20mg	225	\$4,747.41	\$21.1	#95 per 29 days	63	10 – 63
FLEQSUVY (oral suspension)	0		\$6.60 per ml			
LYVISPAH (oral granules)	0					
OZOBAX (oral solution)	0		\$2.07 per ml			
carisoprodol	124	\$1,635.88	\$13.19	#64 per 23 days	42	18 – 63
chlorzoxazone	27	\$1,126.01	\$41.70	#63 per 24 days	11	34 – 64
cyclobenzaprine	1,699	\$17,145.31	\$10.09	#43 per 21 days	978	11 – 69
cyclobenzaprine ER (Amrix)	4	\$853.20	\$213.30	#30 per 30 days	1	43
dantrolene	19	\$1,251.85	\$65.89	#115 per 29 days	6	8 – 55
metaxalone	98	\$3,615.20	\$36.89	#55 per 22 days	41	14 – 63
methocarbamol	276	\$3,915.26	\$14.19	#64 per 22 days	135	11 – 64
orphenadrine	53	\$1,358.43	\$25.63	#49 per 25 days	28	19 – 61
tizanidine	591	\$8,256.05	\$13.97	#68 per 25 days	240	8 – 64
orphenadrine/ASA/caffeine	0					
carisoprodol/ASA/codeine	0					

*Red font denotes drug is on PA

Amrix & Fexmid PA criteria:

- 60-day trial of cyclobenzaprine 5 mg tab OR cyclobenzaprine 10 mg tab in the past 120 days

State A – PA criteria for Fleqsuvy:

1. Member is 12 to 17 years of age or unable to swallow tablets OR
2. Step Therapy: Try baclofen tab, chlorzoxazone, cyclobenzaprine IR, methocarbamol, orphenadrine, tizanidine tabs first

Therapeutic Class Overview

Skeletal Muscle Relaxants

INTRODUCTION

- Skeletal muscle relaxants are classified by their pharmacologic properties as either antispastic or antispasmodic agents. The antispastic agents are used to reduce spasticity that interferes with function or daily living activities, such as in cerebral palsy, multiple sclerosis (MS), and spinal cord injuries (*See and Ginsburg 2008a*). The antispastic agents include baclofen, tizanidine, and dantrolene. In contrast, the antispasmodic agents are primarily indicated as adjuncts to rest, physical therapy, and other measures for the relief of discomfort associated with acute, painful musculoskeletal disorders. Musculoskeletal conditions include lower back pain, neck pain, tension headaches, fibromyalgia, and myofascial pain. The antispasmodic agents include carisoprodol, chlorzoxazone, cyclobenzaprine (tablet and extended-release capsule), metaxalone, methocarbamol, and orphenadrine citrate.
- Dantrolene is also used for the prevention and management of malignant hyperthermia, a potentially fatal disorder that is usually associated with the administration of certain medications during surgery. Intravenous formulations for acute treatment of malignant hyperthermia, including Dantrium Intravenous, Revonto, and Ryanodex, are considered out of the scope of this review (*See and Ginsburg 2008a*).
- Skeletal muscle relaxants are central nervous system (CNS) depressants and exert their effects either at the spinal cord or cerebral level. Well-controlled clinical studies have not conclusively demonstrated whether relief of musculoskeletal pain results from skeletal muscle relaxant effects, sedative effects, or a placebo effect of the drug (*McEvoy 2022*).
- Although skeletal muscle relaxants are not recommended as primary treatment for acute low back pain, 35% of patients are prescribed muscle relaxants for nonspecific low back pain, and 18.5% receive initial muscle relaxant therapy (*Witenko et al 2014*).
- Evidence from clinical trials of skeletal muscle relaxants is limited because of poor methodological design, insensitive assessment methods, and small numbers of patients. The choice of a skeletal muscle relaxant should be based on its adverse effect profile, tolerability, and cost (*See and Ginsburg 2008b, Witenko et al 2014*).
- Skeletal muscle relaxants, including carisoprodol, chlorzoxazone, cyclobenzaprine, metaxalone, methocarbamol, and orphenadrine, are on the American Geriatrics Society (AGS) Beers Criteria list for potentially inappropriate medications for use in the elderly. These medications are to be avoided in elderly patients due to poor tolerability. Noted adverse effects are anticholinergic adverse effects, sedation, and increased risk of fractures. In addition, the effectiveness of these drugs at doses tolerated by the elderly is questionable (*AGS 2019*).
- This therapeutic class review focuses on the agents outlined in Table 1 for their respective FDA-approved indications.
- Medispan class: Musculoskeletal therapy agents

Table 1. Medications Included Within Class Review

Drug	Generic Availability
Single entity products	
Fleqsuvy (baclofen)	-
Lioresal* (baclofen)	✓
Lyvispah (baclofen)	-
Gablofen (baclofen)	✓
Ozobax (baclofen)	-
Soma (carisoprodol)	✓
Lorzone (chlorzoxazone)	✓
Parafon Forte DSC*‡ (chlorzoxazone)	✓
Amrix (cyclobenzaprine extended-release)	✓
Flexeril* (cyclobenzaprine)	✓
Dantrium (dantrolene)	✓
Skelaxin (metaxalone)	✓
Robaxin* (methocarbamol)	✓

Data as of January 28, 2022, CK-U/KS-U/DKB

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Drug	Generic Availability
Norflex* (orphenadrine citrate)	✓
Zanaflex (tizanidine)	✓
Combination products	
Norgesic Forte**/Orphengesic Forte (orphenadrine/aspirin/cafeine)	✓
Soma Compound with Codeine* (carisoprodol/aspirin/codeine)	✓

*Oral branded products discontinued.

† Orphengesic Forte 50 mg/770 mg/60 mg is another brand combination product that was approved in July 2020; no AB-rated generics exist for this product.

‡ Available as chlorzoxazone 250 mg, 375 mg, 500 mg, and 750 mg tablets; also marketed as Lorzone tablets in strengths of 375 mg and 750 mg, which were approved through an abbreviated new drug application (ANDA).

(Clinical Pharmacology 2022, Drugs@FDA 2022, Drug Facts and Comparisons 2022, Orange Book: Approved Drug Products with Therapeutic Equivalence Evaluations 2022)

INDICATIONS

Table 2. Food and Drug Administration Approved Indications*

Generic name	Spastic conditions (includes spinal cord injury, traumatic brain injury, stroke, multiple sclerosis and/or cerebral palsy)	Acute, painful musculoskeletal conditions as an adjunct to rest, physical therapy, and other measures	Malignant hyperthermia
Single entity products			
Baclofen [§]	✓		
Carisoprodol		✓	
Chlorzoxazone		✓	
Cyclobenzaprine (tablet and extended-release capsule)		✓	
Dantrolene	✓ †		✓ ‡
Metaxalone		✓	
Methocarbamol		✓	
Orphenadrine citrate		✓	
Tizanidine	✓		
Combination products			
Carisoprodol/aspirin/codeine		✓	
Orphenadrine/aspirin/cafeine		✓	

*See product prescribing information for specific indication text and any limitations of use.

† Oral dantrolene only.

‡ Oral dantrolene is indicated pre-operatively to prevent or attenuate the development of signs of malignant hyperthermia and following a malignant hyperthermic crisis to prevent recurrence of signs of malignant hyperthermia.

§ Limitation of use: The baclofen products Fleqsuvy, Lyvispah, and Ozobax are not indicated in the treatment of skeletal muscle spasm resulting from rheumatic disorders.

(Prescribing information: Amrix 2020, baclofen 2021, carisoprodol/aspirin/codeine 2021, chlorzoxazone 2020, cyclobenzaprine 2020, dantrolene sodium capsule 2020, Fleqsuvy 2022, Gablofen 2020, Lioresal 2019, Lorzone 2017; Lyvispah 2021; methocarbamol tablet 2020; orphenadrine/aspirin/cafeine 2021, orphenadrine citrate extended-release 2019, orphenadrine injection 2019, Ozobax 2020, Robaxin injectable 2017; Skelaxin 2018, Soma 2019, Zanaflex 2020)

Information on indications, mechanism of action, pharmacokinetics, dosing, and safety has been obtained from the prescribing information for the individual products, except where noted otherwise.

CLINICAL EFFICACY SUMMARY

- Clinical studies evaluating the utility of skeletal muscle relaxants are limited, poorly designed, and of short duration. Much of the literature supporting the use of these agents was either published decades ago or is lacking in statistical significance and detail.
- One meta-analysis comprising randomized trials (for comparative efficacy and adverse events) and observational studies (for adverse events only) summarized the following study findings (*Chou et al 2004*):
 - There is fair evidence that baclofen, tizanidine, and dantrolene are effective compared to placebo in patients with spasticity (primarily MS).
 - There is fair evidence that baclofen and tizanidine are roughly equivalent in efficacy for patients with spasticity, but insufficient evidence to determine the efficacy of dantrolene compared to baclofen or tizanidine.
 - There is fair evidence that cyclobenzaprine, carisoprodol, orphenadrine, and tizanidine are effective compared to placebo in patients with musculoskeletal conditions (primarily acute back or neck pain). Cyclobenzaprine has been evaluated the most in clinical trials and has consistently been found to be effective.
 - There is very limited or inconsistent data regarding the effectiveness of metaxalone, methocarbamol, chlorzoxazone, baclofen, or dantrolene compared to placebo in patients with musculoskeletal conditions.
 - There is insufficient evidence to determine the relative efficacy or safety of cyclobenzaprine, carisoprodol, orphenadrine, tizanidine, metaxalone, methocarbamol, and chlorzoxazone.
- A few head-to-head studies were conducted comparing the efficacy of the skeletal muscle relaxants. One study compared the improvement in pain, muscle tension, and limitation of movement between tizanidine and chlorzoxazone. There were no significant differences noted between treatment groups with respect to study endpoints (*Bragstad et al 1979*). A similarly designed trial was conducted comparing the efficacy of carisoprodol to cyclobenzaprine. Findings revealed no clinically significant differences in pain, muscle spasms, activity impairment, or overall improvement with either treatment group (*Rollings et al 1983*).
- Most available clinical trials evaluated the efficacy of skeletal muscle relaxants in comparison to placebo. The results were mixed. Several studies reported an improvement in endpoints (ie, muscle spasms, muscle cramps, lower back pain) with carisoprodol, tizanidine, cyclobenzaprine, dantrolene, and methocarbamol therapy over placebo (*Casale et al 1988*, *Serfer et al 2010*, *Vakhapova et al 2010*, *Weil et al 2010*, *Abd-El Salam et al 2019*). However, reported findings from another study revealed no difference in similarly reported endpoints between placebo and baclofen (*Dapas et al 1985*).
- In patients with lower back pain, a randomized controlled trial (n = 320) compared ibuprofen plus placebo vs ibuprofen plus a muscle relaxant (baclofen, metaxalone, or tizanidine). Following a 1-week course of therapy, the addition of baclofen, metaxalone, or tizanidine to ibuprofen did not significantly improve back pain or functioning compared to ibuprofen plus placebo (*Friedman et al 2019*). Similarly, an analysis of 4 studies in patients with acute lower back pain did not find baclofen, metaxalone, tizanidine, orphenadrine, methocarbamol, or cyclobenzaprine to improve outcomes vs placebo (*Abril et al 2022*).
- One open-label trial (n = 52) compared the use of baclofen to transcutaneous electrical nerve stimulation (TENS) over a period of 4 weeks in patients with MS and diagnosed muscle spasm in the lower extremities. This trial demonstrated decreased spasticity measured on the modified Ashworth Scale (MAS) in the baclofen group, but the improvement was less than that in the TENS group. The small size and open-label design of the study limits interpretation of the results (*Shaygannejad et al 2013*).
- A systematic review evaluating the treatment of spasticity in MS included controlled trials and observational studies and concluded that oral baclofen, tizanidine, and gabapentin are first-line options due to their positive data. Use of oral dantrolene as a second-line therapy was supported by 3 small studies. Finally, despite limited evidence, the authors also recommended intrathecal baclofen in patients with severe symptoms with a suboptimal response to oral agents (*Otero-Romero et al 2016*).
- A network meta-analysis evaluating the efficacy of treatments used for spasticity in MS concluded that only cannabinoids and botulinum toxin demonstrated significant advantages over placebo. Of the skeletal muscle relaxants analyzed (baclofen, dantrolene, and tizanidine), none demonstrated an advantage over placebo for producing a

significant improvement of spasticity. Further, botulinum toxin was found to be superior to both tizanidine and baclofen (Fu et al 2018).

- Another study (n = 45) compared tizanidine, cyclobenzaprine, and placebo for the treatment of myofacial pain. Although one of the co-primary endpoints, the modified Severity Symptoms Index (mSSI), demonstrated greater improvements in patients treated with cyclobenzaprine, these results were difficult to interpret due to differences in baseline measures and lack of demonstrated effects on other endpoints. The authors concluded that overall, the use of tizanidine or cyclobenzaprine was not more effective than placebo in the treatment of myofacial pain (Alencar et al 2014).

CLINICAL GUIDELINES

- Few treatment guidelines addressing the appropriate use of skeletal muscle relaxants are available.
 - Guidelines from the Department of Veterans Affairs/Department of Defense on treatment of low back pain, which were published in 2019, state that there is moderate quality evidence supporting use of skeletal muscle relaxants for treatment of acute, but not chronic, low back pain. No evidence was found to support a benefit of one agent over another, therefore, adverse effect profiles of the individual agents should be considered when selecting an agent (Pangarkar et al 2019).
 - According to the 2017 American College of Physicians guideline on noninvasive treatments for acute, subacute, and chronic low back pain, clinicians and patients should select nonpharmacologic treatment with superficial heat, massage, acupuncture, or spinal manipulation initially. If pharmacologic therapy is needed, clinicians may choose nonsteroidal anti-inflammatory drugs (NSAIDs) or skeletal muscle relaxants (Qaseem et al 2017).
 - Guidelines from the American Academy of Neurology and the Child Neurology Society on the pharmacologic treatment of spasticity in children and adolescents with cerebral palsy, which were reaffirmed in 2019, note that for generalized spasticity that warrants treatment, diazepam should be considered for short-term use, and tizanidine may be considered. There are insufficient data to support or refute the use of dantrolene, oral baclofen, or continuous intrathecal baclofen in this setting (Delgado et al 2010).
 - Guidelines from the American Academy of Pediatrics (AAP) list dantrolene, baclofen, and tizanidine as potential agents for the management of spasticity, although the potentiation of seizures in children with cerebral palsy is a concern with baclofen. Muscle relaxants have been used with varying success for treatment of dystonia (Hauer et al 2017).

SAFETY SUMMARY

- As a class, skeletal muscle relaxants carry some risk of drowsiness and dizziness. Other shared adverse drug reactions include vertigo, nausea, vomiting, impaired vision, and neuropsychiatric effects such as mania, depression, psychosis, confusion, and amnesia.
- Blood dyscrasias such as thrombocytopenia, leukopenia, and aplastic anemia have been reported with dantrolene, metaxalone, methocarbamol, and tizanidine.
- Cardiovascular complaints associated with baclofen administration include palpitations, flushing, bradycardia, hypotension, and hypertension. Facial flushing and orthostatic hypotension have been reported with carisoprodol use. Cyclobenzaprine and methocarbamol are associated with hypotension, palpitations, and syncope. Mild hypotension, symptomatic orthostatic hypotension, and syncope have been described with tizanidine use. Pericarditis, pleural effusions, and pleural fibrosis have been described with chronic therapeutic dantrolene use.
- Gastrointestinal complaints typically include nausea, vomiting, abdominal pain, and diarrhea or constipation. Aspirin-containing products can cause gastrointestinal bleeding.
- Aspirin-containing products should not be used in patients with chicken pox, influenza, or flu symptoms due to risk for Reye's syndrome.
- Idiosyncratic, potentially fatal hepatotoxicity is associated with chronic chlorzoxazone and dantrolene use. Onset of chlorzoxazone-associated hepatotoxicity is variable, typically occurring within weeks of initiation of therapy, but occasionally occurring after ≥ 5 months. Reversible, centrilobular hepatotoxicity has recurred upon rechallenge to chlorzoxazone. Risk factors for fatal hepatic necrosis after dantrolene use include age > 30 years, chronic use > 2 months, female gender, dosages exceeding 300 mg/day, high bilirubin levels, and concomitant illness.
- Carisoprodol is contraindicated for use in patients with acute intermittent porphyria.
- Urinary retention has been associated with baclofen, cyclobenzaprine, orphenadrine, and tizanidine.
- Dantrolene and baclofen use is associated with acneiform and morbilliform rashes, respectively.

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- Allergic-type skin rashes, petechiae, or ecchymoses may occur with chlorzoxazone.
- Cyclobenzaprine and orphenadrine are associated with central and peripheral antimuscarinic symptoms.
- Cyclobenzaprine and metaxalone contain a warning for the potential of serotonin syndrome when used concomitantly with other serotonergic drugs.
- Profound muscle weakness can occur with dantrolene use, resulting in diminished protective airway reflexes.
- Severe allergic reactions have been reported with carisoprodol.
- Baclofen has been associated with movement disorders, memory impairment, muscle weakness, flapping tremor, nystagmus, diplopia, and dysarthria. Increased seizure activity, including status epilepticus, has been observed in patients with pre-existing seizure disorders.
- Sensorineural hearing loss has been described with therapeutic use of intravenous and oral dantrolene.
- Cases of dependence, withdrawal, and abuse have been reported with prolonged use of carisoprodol.
- Seizures have been reported with use of carisoprodol, although these have mostly occurred in the setting of multiple drug overdoses.
- Boxed warnings exist for dantrolene, intrathecal baclofen, and carisoprodol/aspirin/codeine. Dantrolene has a potential for inducing hepatotoxicity and symptomatic hepatitis. Abrupt discontinuation of intrathecal baclofen, regardless of the cause, has resulted in sequelae such as high fever, altered mental status, exaggerated rebound spasticity, and muscle rigidity. Respiratory depression and death have occurred in children who received codeine following tonsillectomy and/or adenoidectomy and had evidence of being ultra-rapid metabolizers of codeine due to cytochrome (CYP) 2D6 polymorphism.
- Specific additional warnings relate to the safe administration of intrathecal baclofen preparations. Based on the risks of life-threatening CNS depression, cardiovascular collapse, and/or respiratory failure, physicians must be adequately trained and educated in chronic intrathecal infusion therapy. Some phases of therapy must be conducted in an appropriate medical setting. Additionally, a warning in the Gablofen prescribing information notes that the external surfaces of the prefilled syringes are non-sterile, and there are special considerations to prevent contamination during use.
- Skeletal muscle relaxants are on the AGS Beers Criteria list for potentially inappropriate medications for use in the elderly. They are to be avoided in elderly patients due to poor tolerability. Noted adverse effects are anticholinergic adverse effects, sedation, and increased risk of fractures (AGS 2019).

DOSING AND ADMINISTRATION

Table 3. Dosing and Administration

Drug	Available Formulations	Route	Usual Recommended Frequency	Comments
Single entity products				
Baclofen	Tablet, oral solution, oral suspension, oral granules, injection	Oral, Intrathecal	Tablet: 3 times daily Oral solution and suspension: 3 to 4 times daily Oral granules: 3 to 4 times daily Injection: continuous infusion via implantable pump	After the screening trial, intrathecal administration is to be done with a programmable pump labeled for intrathecal administration of baclofen. When discontinuing, the dose should be reduced slowly.
Carisoprodol	Tablet	Oral	3 times daily and at bedtime	To reduce abuse potential, limit duration of therapy to ≤ 3 weeks.

Drug	Available Formulations	Route	Usual Recommended Frequency	Comments
Chlorzoxazone	Tablet	Oral	3 to 4 times daily	
Cyclobenzaprine	Tablet, extended-release capsule	Oral	Tablet: 3 times daily Extended-release capsule: once daily	In patients who cannot swallow the extended release capsules, the contents of the capsule can be sprinkled over applesauce and then swallowed. Use for periods > 2 to 3 weeks is not recommended.
Dantrolene	Capsule	Oral	1 to 4 times daily	The duration of therapy depends on the indication.
Metaxalone	Tablet	Oral	3 to 4 times daily	Taking with food may enhance general CNS depression.
Methocarbamol	Tablet, injection	Oral, IV, IM	Oral: 4 times daily initially; maintenance may be every 4 hours, 3 times daily, or 4 times daily depending on the dose Injection: single dose for moderate symptoms; every 8 hours for severe symptoms for ≤ 3 consecutive days	
Orphenadrine citrate	Extended release tablet, injection	Oral, IV, IM	Oral: twice daily Injection: every 12 hours	
Tizanidine	Capsule, tablet	Oral	3 doses daily (maximum)	Capsules and tablets are not bioequivalent in the fed state.
Combination products				
Carisoprodol/aspirin/codeine	Tablet	Oral	4 times daily	Maximum duration of therapy is up to 2 to 3 weeks.
Orphenadrine/aspirin/caffeine	Tablet	Oral	3 to 4 times daily	

Abbreviations: CNS = central nervous system, IM = intramuscular, IV = intravenous.

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(Clinical Pharmacology 2022, Drug Facts and Comparisons 2022, Micromedex 2022)

SPECIAL POPULATIONS

Table 4. Special Populations

Drug	Population and Precaution				
	Elderly	Pediatrics	Renal Dysfunction	Hepatic Dysfunction	Pregnancy* and Nursing
Single entity products					
Baclofen	Information is not available.	Safety and efficacy have not been established in children < 12 years (oral) or < 4 years (intrathecal).	Use with caution; dose adjustment may be required.	No dosage adjustment required.	Unclassified† Excreted in breast milk after oral administration; unknown whether intrathecal baclofen is excreted in breast milk; use caution
Carisoprodol	Efficacy, safety, and PK have not been established in patients > 65 years of age	Safety and efficacy have not been established in children < 16 years.	Safety and PK have not been evaluated. Excreted by kidney; use caution.	Safety and PK have not been evaluated. Metabolized in liver; use caution.	Unclassified† Data over many decades of carisoprodol use in pregnancy have not identified a drug-associated risk of major birth defects, miscarriage, or other adverse maternal or fetal outcomes. Excreted in breast milk; use caution
Chlorzoxazone	Information is not available.	Information is not available.	Information is not available.	Discontinue if symptoms of liver dysfunction are observed.	Unclassified† Safe use in pregnancy has not been established Unknown whether excreted in breast milk

Drug	Population and Precaution				
	Elderly	Pediatrics	Renal Dysfunction	Hepatic Dysfunction	Pregnancy* and Nursing
Cyclobenzaprine (tablet and extended-release capsule)	Therapy should be initiated with a 5 mg dose and titrated slowly upward. Extended release capsules are not recommended in the elderly.	Safety and efficacy of immediate release tablets have not been established for patients < 15 years. Safety and efficacy of extended release capsules have not been established in pediatric patients.	No information is available.	Mild: start with 5 mg and titrate up. Moderate to severe: not recommended. Extended release capsules: not recommended.	Pregnancy Category B (tablet) Unclassified [†] (extended-release capsule) Available data from case reports have not identified a drug-associated risk of major birth defects, miscarriage, or other adverse maternal or fetal outcomes. Unknown whether excreted in breast milk
Dantrolene	Clinical studies did not include sufficient numbers of subjects age > 65 years to determine whether they respond differently than younger patients. Dose selection should be cautious.	Long-term safety in patients < 5 years has not been established.	Information is not available.	Contraindicated in active liver disease.	Unclassified [†] Safe use in pregnancy has not been established Should not be used by nursing mothers
Metaxalone	Elderly may be more susceptible to CNS effects. No specific dose adjustment instructions are available.	Safety and effectiveness in children ≤ 12 years of age have not been established.	Use with caution. Contraindicated in significant renal impairment.	Use with caution. Contraindicated in significant hepatic impairment.	Unclassified [†] Adverse fetal outcomes have not been reported, although the possibility of fetal injury cannot be ruled out.

Drug	Population and Precaution				
	Elderly	Pediatrics	Renal Dysfunction	Hepatic Dysfunction	Pregnancy* and Nursing
					Unknown whether excreted in breast milk
Methocarbamol	Half-life is slightly prolonged. No specific dose adjustment instructions are available.	Safety and effectiveness in children < 16 years have not been established (tablet). Safety and effectiveness have not been established (injection).	No specific dose adjustment instructions are available for the oral tablet. Injection is contraindicated with renal pathology due to the presence of polyethylene glycol in the vehicle.	Clearance is reduced and half-life is prolonged. No specific dose adjustment instructions are available.	Unclassified† Safe use in pregnancy has not been established Unknown whether excreted in breast milk; use caution
Orphenadrine citrate	Information is not available.	Safety and effectiveness have not been established.	Information is not available.	Information is not available.	Pregnancy Category C Unknown whether excreted in breast milk
Tizanidine	Use with caution; clearance is decreased four-fold.	Safety and effectiveness have not been established.	Clearance is reduced; use with caution and with reduced doses in patients with CrCl < 25 mL/min.	Undergoes extensive metabolism; not recommended in patients with hepatic insufficiency.	Unclassified† Unknown whether excreted in breast milk; use caution
Combination products					
Carisoprodol/aspirin/codeine	Clinical studies did not include sufficient numbers of patients > 65 years of age to determine whether they respond differently than younger patients. Dose selection should be cautious.	Contraindicated in patients < 12 years of age, or < 18 years of age after surgery to remove tonsils/adenoids. The efficacy and safety in pediatric patients < 18 years of age have not been established. Do not use in children with	Avoid in severe renal failure (GFR < 10 mL/min) due to the aspirin component. In patients with less severe disease, use lower starting doses or longer dosing intervals and titrate slowly with close monitoring.	Use lower starting doses or longer dosing intervals and titrate slowly with close monitoring.	Pregnancy Category D Excreted in breast milk; avoid use

Drug	Population and Precaution				
	Elderly	Pediatrics	Renal Dysfunction	Hepatic Dysfunction	Pregnancy* and Nursing
		viral illness due to the risk of Reyes syndrome with aspirin exposure. Avoid use in children aged 12 to 18 years with risk factors for respiratory depression.			
Orphenadrine/ aspirin/caffeine	Information is not available.	Safety and effectiveness have not been established. Use in children < 12 years of age is not recommended	Information is not available.	Information is not available.	Unclassified [†] Safe use in pregnancy has not been established Unknown whether excreted in breast milk

Abbreviations: CNS = central nervous system, CrCl = creatinine clearance, GFR = glomerular filtration rate, PK = pharmacokinetics.

[†]In accordance with the FDA's Pregnancy and Lactation Labeling Rule (PLLR), this product is not currently assigned a Pregnancy Category. Consult product prescribing information for details.

*Pregnancy Category B = No evidence of risk in humans, but there remains a remote possibility. Animal reproduction studies have failed to demonstrate a risk to the fetus, and there are no adequate and well-controlled studies in pregnant women.

*Pregnancy Category C = Risk cannot be ruled out. Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

*Pregnancy Category D = Positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may justify the use of the drug in pregnant women despite potential risks.

(Clinical Pharmacology 2022; Micromedex 2022)

CONCLUSION

- Skeletal muscle relaxants are classified by their pharmacologic properties as either antispastic or antispasmodic agents. The antispastic agents include baclofen, tizanidine, and dantrolene; the antispasmodic agents include carisoprodol, chlorzoxazone, cyclobenzaprine (tablet and extended-release capsule), metaxalone, methocarbamol, and orphenadrine citrate. The mechanism of action for most of these agents is unclear but may be related in part to their sedative effects.
- Although clinical data is quite limited, skeletal muscle relaxants generally appear to be more effective than placebo in providing symptomatic relief of acute lower back pain. Skeletal muscle relaxants are generally reserved for patients who require adjunctive pharmacologic therapy and fail over-the-counter analgesics such as acetaminophen or NSAIDs.
- As a class, all skeletal muscle relaxants carry some risk of drowsiness and dizziness. Other shared adverse drug reactions may include vertigo, nausea, vomiting, impaired vision, and neuropsychiatric effects such as mania, depression, psychosis, confusion, and amnesia.
- There is no compelling evidence that skeletal muscle relaxants differ in efficacy or safety. Current evidence suggests that skeletal muscle relaxants are not as well tolerated (ie, adverse CNS effects) as NSAIDs. Additionally, clinical superiority relative to NSAIDs has not been established. According to a 2017 American College of Physicians guideline on noninvasive treatments for acute, subacute, and chronic low back pain, clinicians and patients should select

nonpharmacologic treatment with superficial heat, massage, acupuncture, or spinal manipulation initially (Qaseem et al 2017). If pharmacologic therapy is needed, clinicians may choose NSAIDs or skeletal muscle relaxants.

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